TORONTO AREA WATERSHED MANAGEMENT STRATEGY STUDY

TECHNICAL REPORT #2

INTERIM REPORT ON HUMBER RIVER AND TORONTO AREA WATER QUALITY

Ministry of the Environment
Ontario

Toronto Area Watershed
Management Strategy Study

Technical Report #2

INTERIM REPORT ON HUMBER RIVER AND TORONTO AREA WATER QUALITY

Prepared For The

ONTARIO MINISTRY OF THE ENVIRONMENT

by

Acres Consulting Services Ltd.

DECEMBER, 1983

ACRES

November 22, 1983
P6652.00

Ministry of the Environment
135 St. Clair Avenue W
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Attention: Mr. D. Weatherbe

Dear Mr. Weatherbe:

Interim Report on Humber River and Toronto Area Water Quality

We are pleased to submit our Interim Report for the TAWMS program Part 2 on Humber River and Toronto Area Water Quality.

This report documents the fall 1982 field sampling program and interpretation of the water quality results from that program. At the time of writing this report, analytical data were unavailable for the sediment and biological tissues and for the spring 1983 field program. Ongoing interpretation of these more recent data is now underway and the results from this interpretation will form part of our final report.

During the course of this work we have received extensive input from the Water Resources Branch and would like to take this opportunity to thank those involved for their cooperation.

Yours very truly,

I. K. Hill
Project Manager

LAS:jat

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Acres wishes to acknowledge the assistance provided by the Ministry of Environment (MOE) Water Resources Branch, who, through their appointed liaison officer, Mr. Z. Novak, provided constant and valuable input to the study planning and direction. Mr. B. Whitehead and Mr. A. Bacchus of MOE also made a major contribution to the field sampling effort as well as acted as liaison with other government agencies for the collection of historical data and laboratory analytical results.

We also wish to acknowledge the cooperation and input received from the Water Survey of Canada and the Metro Toronto and Region Conservation Authority. Land-use data was made available by Gartner Lee Associates, who are undertaking a separate project for the TAWMS study.

In subcontractual arrangements, Underwood McClellan Limited provided valuable field assistance and the space required for the field operations center, while LIMNOS executed the biological aspects of the sampling program.

All chemical analysis were carried out by the Laboratory Services and Applied Research Branch of the MOE.

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1. INTRODUCTION

The five-year Toronto Area Watershed Management Strategy Study (TAWMS) was initiated in 1981 by the Ministry of the Environment (MOE). Although wholly funded and managed by MOE, TAWMS receives extensive cooperation and support from the Metropolitan Toronto and Region Conservation Authority (MTRCA) and from the boroughs and cities of the Municipality of Metropolitan Toronto. This multi-agency approach is vital to the success of the project and to the implementation of study recommendations.

The study's overall goal is to produce a comprehensive water quality management plan for the Toronto area watersheds, with particular emphasis on the Don and Humber rivers and Mimico Creek. To fulfill this goal, three specific objectives have been defined. They are

- to better define water quality conditions within the study area

- to carry out detailed analysis of selected subwatersheds and to conduct demonstrations of suitable remedial measures to reduce pollutant loadings to receiving waters

- to develop cost effective measures for controlling pollutant loadings to the study area's receiving waters based on watershed needs and/or uses.

In 1981, TAWMS was directed toward a closer definition of existing water quality conditions within the study area. The work relied heavily on historical and water quality data collected through the routine sampling programs of MOE and other agencies. Use was also made of information from a limited sampling program undertaken by TAWMS in 1981 to supplement the routine data base. The results of this first year's problem definition study are reported in the Interim Report dated April 1983*. The activities proposed for the 1982 to 1986 TAWMS program are reproduced below.

*Ministry of the Environment. Toronto Area Watershed Management Strategy Study Interim Report on Toronto Area Water Quality, April 1983.

(a) The water quality in the rivers was observed to be worse in urbanized areas, so the 1982 TAWMS activities will focus on those portions of the Don and Humber rivers and Mimico Creek basins within Metropolitan Toronto boundaries (i.e., south of Steeles Avenue).

(b) Particular attention will be directed to further study of pollutants which are of most concern for public health reasons (e.g., bacteria), of those which are most persistent in aquatic systems (e.g., trace organic compounds), and those whose distribution and severity of contamination in the study area are least well known (e.g., trace organics and heavy metals).

(c) The 1982 TAWMS activities will be divided into "source" studies of outfalls and other sources of contamination and studies of the receiving stream waters. All TAWMS activities in the watersheds will be coordinated with ongoing waterfront monitoring programs.

(d) Research efforts will be directed primarily to the abatement of water quality problems. Urban stormwater runoff, combined sewer overflows and sewage treatment plant effluents appear to have particular significance in the impairment of receiving stream water quality, especially with respect to bacteria, nutrients and heavy metals.

(e) Water quality sampling programs will be designed to monitor and characterize sources such as storm flows, spring runoff from snowmelt, and individual effluents. In particular, a comprehensive effort will be undertaken to pair water quality sampling with hydrologic sampling under a variety of flow conditions to evaluate loadings of pollutants as well as their instantaneous concentrations at a particular location. This will aid in assessing the relative importance of each source in determining receiving water quality.

These proposed activities were translated into a work program designed to satisfy the second TAWMS objective. In 1982, two technical working groups, the Pollution Control Committee (PCC) and the Water Quality

Committee (WQC) were established to direct the work program. The role of the PCC is to investigate the pollutant sources associated with urban discharges from storm sewer outfalls and combined sewer overflows. The functions of the WQC is to assess the impact of these urban contributions on the receiving stream water quality and to study instream pollutant behavior.

Figure 1 indicates that both committees interact so as to ultimately develop cost effective pollutant control measures. This in turn will lead to the development of a watershed management strategy.

Major emphasis of the 1982 program was directed toward the Humber River watershed with a limited effort in the Don River and Mimico Creek watersheds. Resources were not available to permit the detailed level of analysis required for all of the watersheds. Detailed levels of work are planned however, for the remaining watersheds as TAWMS progresses.

This report describes part of the program carried out by the Water Quality Committee consistent with the proposed TAWMS activities in 1981. This effort focuses on the urban areas within Metropolitan Toronto boundaries below Steeles Avenue. As many of the potential sources were expected to contribute contaminants only during rainfall events, the program examined water quality during dry weather and also during several rainfall periods. Figure 2 shows the study area. The work consisted of a field program and data interpretation that was supported by a mathematical modeling exercise.

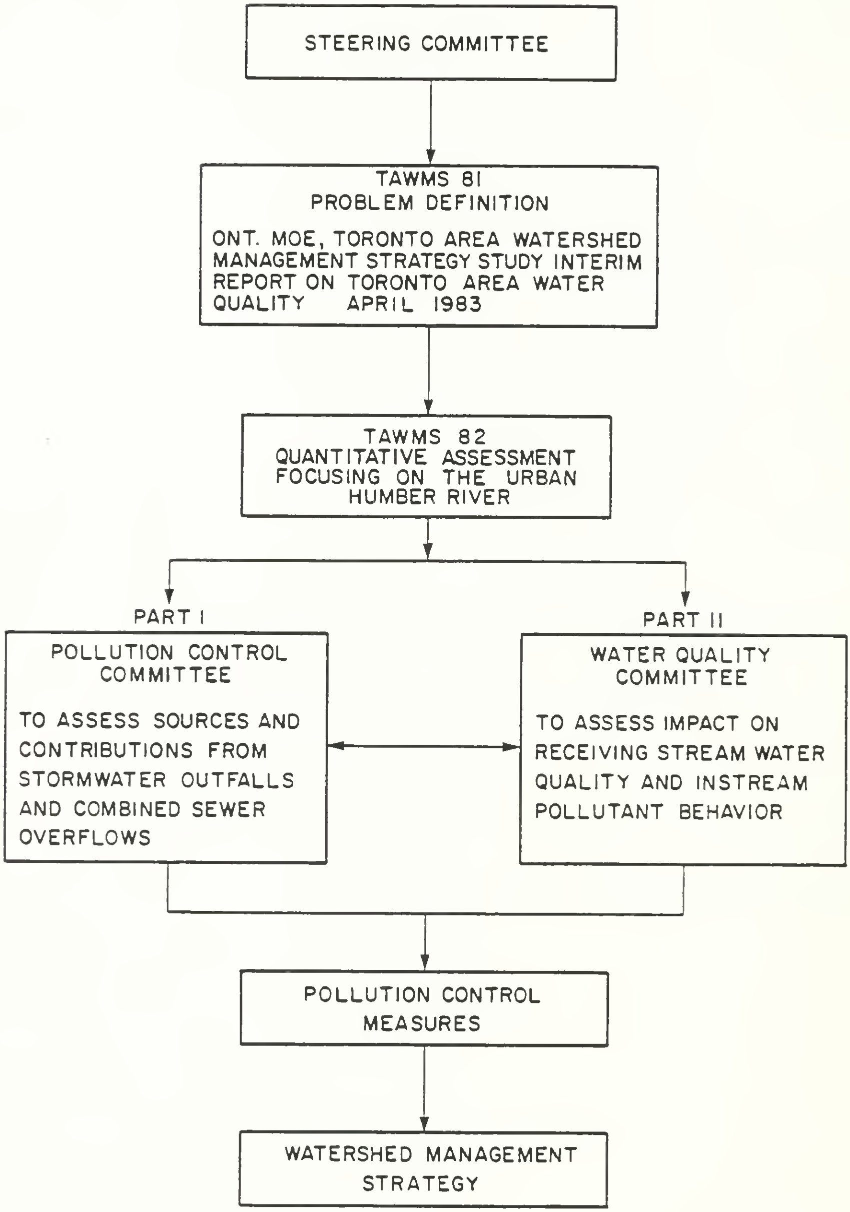

FIG. I

ONTARIO MINISTRY OF ENVIRONMENT
TORONTO AREA WATERSHED MANAGEMENT STUDY – TAWMS 82

TAWMS 82 STUDY ORGANIZATION

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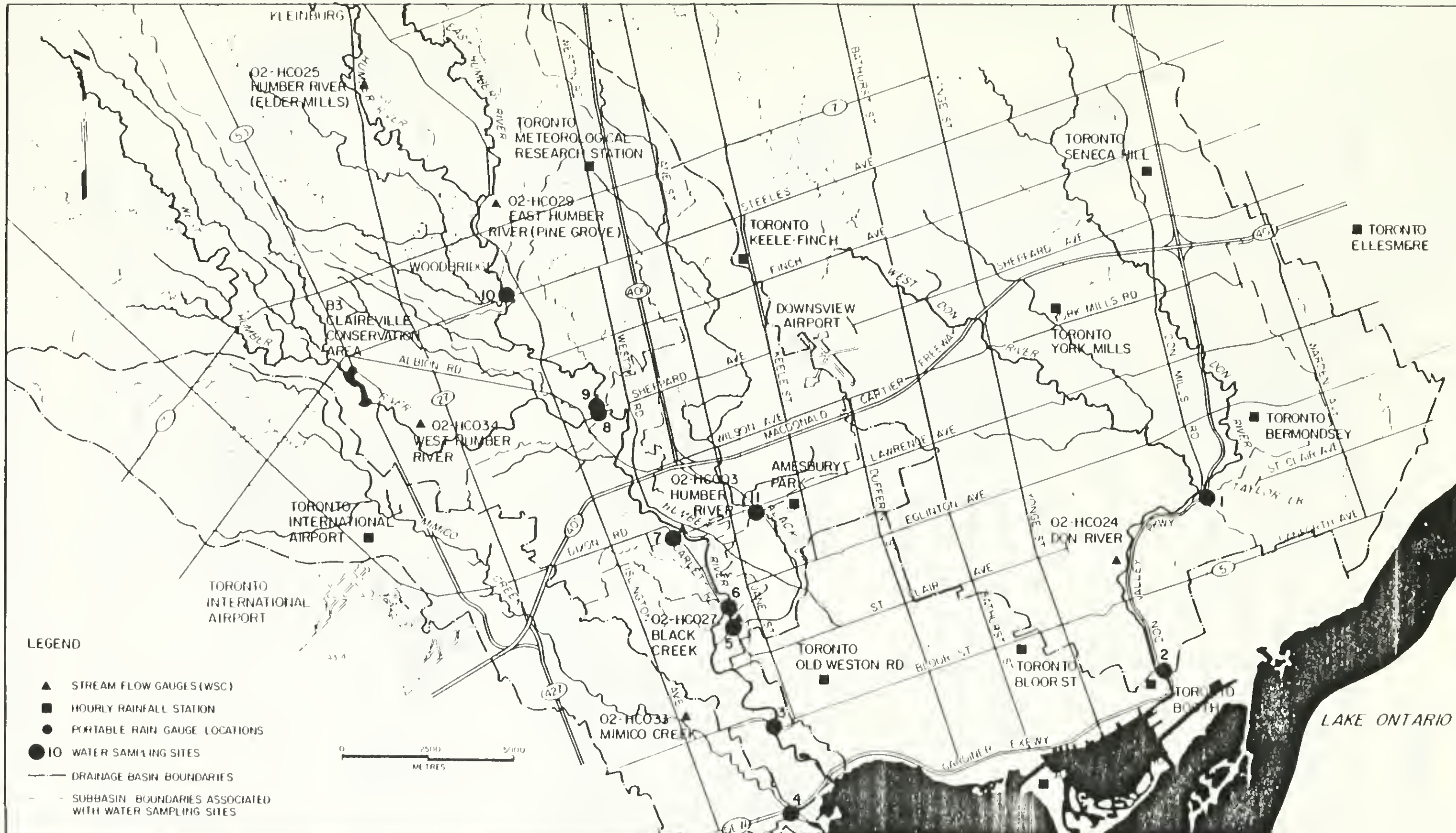

FIG 2

ONTARIO MINISTRY OF ENVIRONMENT

TORONTO AREA WATERSHED MANAGEMENT STUDY TAWMS 82

TAWMS 82 STUDY AREA

ACRES

2. FIELD PROGRAM

In the urbanized Humber River basin, major potential loadings to the river can come from combined sewer overflows, from storm water runoff via storm sewers, and from direct overland and groundwater flows. As detailed sampling of all these sources during storms is not practical, this program was designed to determine the input of these contributions from various urban subbasins to the receiving waters.

2.1 Monitoring Network

A field monitoring network was established on the Humber River, Don River, and Mimico Creek basins and a sampling program was carried out between October 5 and November 22, 1982. Figure 2 shows the locations of the individual sampling sites. River mouth stations were chosen on each of the three watersheds both for overall basin comparison, as well as for future calculation of annual loadings. One tributary to the Don (Taylor Creek) was also chosen because it was identified during the 1981 program as a major contributor of pollutants.

However, as emphasis was placed on the Humber River watershed, eight of the eleven sampling sites were located there. These were selected to reflect the subdrainage areas of the basin and to separate inputs from subbasins of differing land use or in recognition of sewage overflow systems or other readily identifiable sources.

A schematic of the Humber River sampling system showing the relative proportions of four broad land-use categories within each subbasin is shown in Figure 3. The actual percentages of each of these categories are provided in Table 1.

Site 10 was chosen to assess the background input from the predominantly rural watershed upstream from it. Increasing urbanization is seen progressively downstream from Steeles Avenue (Sites 9, 7, 6, 3). The controlled outflow from the West Humber was monitored at Site 8. The Black Creek subbasin was sampled at two sites (11 and 5), to distinguish the combined sewer overflow contribution from the generally urban and storm water sources.

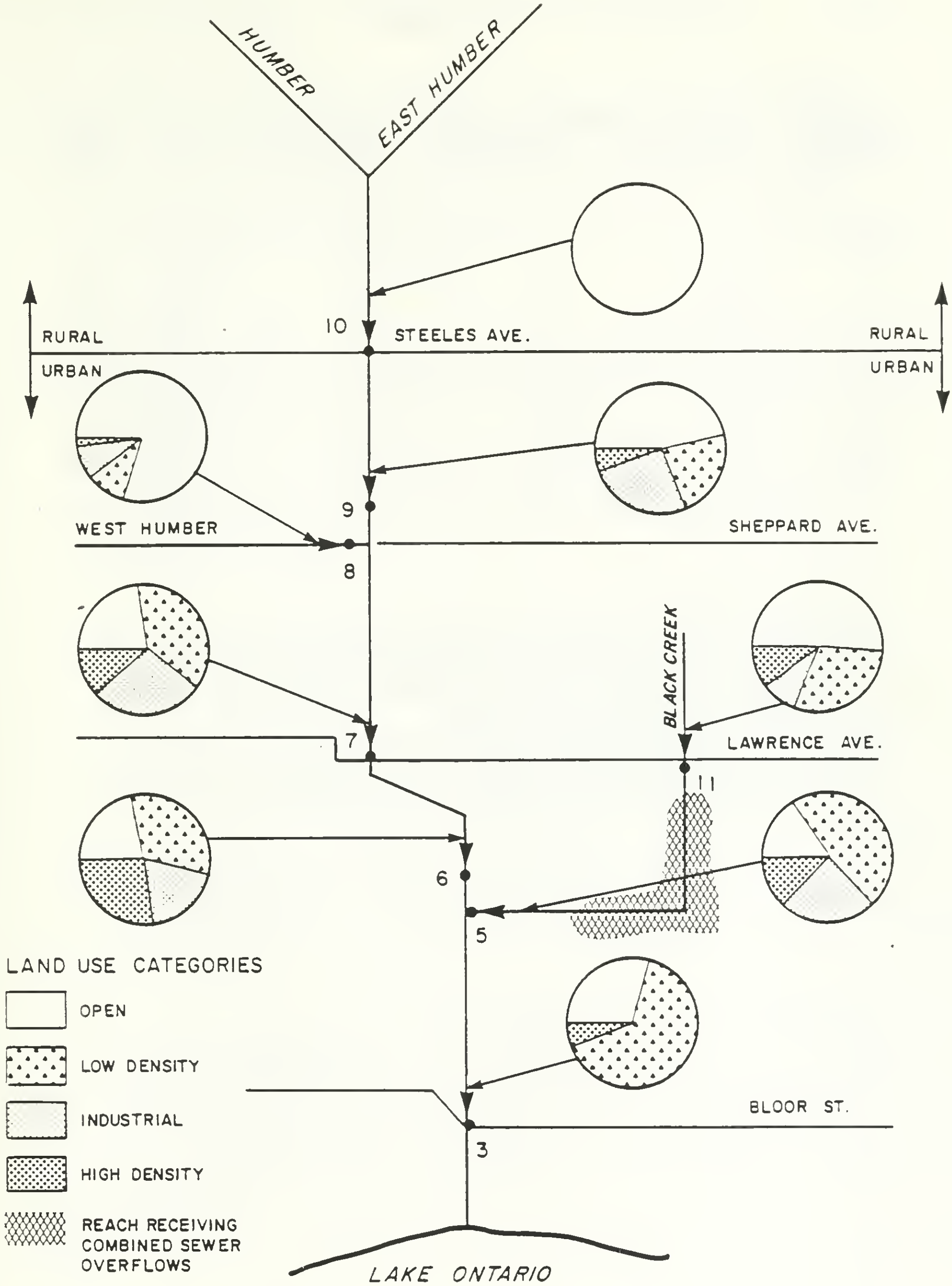

FIG. 3

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TORONTO AREA WATERSHED MANAGEMENT STUDY - TAWMS 82

SCHEMATIC OF HUMBER RIVER SUBBASINS

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Table 1: PERCENTAGE LAND USE BY CATEGORY*

Drainage Area***	Land-Use Category** Low Density	High Density	Industrial	Open	Total*** Area (km^2)
10	0	0	0	100	570.5
9	22.0	5.8	24.7	47.5	26.5
8	9.6	1.7	8.5	80.2	221.2
7	37.7	11.2	27.7	23.4	14.9
6	32.3	27.0	19.3	21.4	15.2
11	30.8	10.4	8.1	50.7	50.4
5	48.0	12.8	24.1	15.1	14.7
3	64.4	6.2	0.2	29.2	12.0

* Reported values are net for individual basins.
** Low Density - low and medium residential (low impervious)
High Density - high density residential, commercial and transportation (high impervious)
Industrial - All classes of industry
Open - rural, parks and utilities (high pervious).
***Drainage area and total area refer to the area between sampling points draining to the numbered sampling point.

2.2 Methodology

At the stations noted in Figure 2, surface water quality samples were taken during two dry weather/low-flow periods and three rainfall/runoff periods. During each of the dry periods (October 5 and October 26, 1982) chosen to assess low-flow water quality conditions, single samples were taken at each site and analyzed for the parameters listed in Table 2.

Three wet weather periods were sampled to relate water quality to flow. During each of these events precipitation was measured and flow was estimated at each of the sampling sites using rated staff gauges installed specifically for this purpose. Water Survey of Canada (WSC) gauges were also monitored during the event periods. Rainfall and flow gauging stations within the study area are indicated in Figure 2.

Using the river stage to indicate flow conditions, samples were taken so as to describe the event hydrograph. For each event, a total of eight samples were analyzed for conventional water quality parameters and bacteria, four for inorganic parameters, and two for pesticides and organics, from each of the eleven sampling sites.

In addition to the water quality sampling, a single set of sediment samples were taken at twenty-two locations within the study area and analyzed for a variety of chemical constituents as well as for particle size distribution.*

To further contribute to the assessment of organic contaminants, biological tissues were also collected for analysis. Fish tissues were collected from locations on the Humber River and a clam bio-accumulation study was carried out at thirty-five sites within the study watersheds. These tissues were analyzed for pesticides and organics.*

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*Results of these analyses were not available for incorporation in this report.

Table 2: WATER QUALITY PARAMETERS TESTED

Conventional Water Quality Parameters

BOD_5
NH_4
pH
Filtered reactive phosphate
Unfiltered total phosphorus
Residue Filtrate (TDS)
Residue Particulate (TSS)

Inorganic Trace Contaminants (Metals)

Cadmium
Chromium
Copper
Mercury
Nickel
Lead
Zinc

Bacteriological Parameters

Fecal coliforms
Fecal streptococci

Pesticides and Organic Compounds

Aldrin (ALDR)*
α BHC hexachlorocyclohexane (BHCA)
β - BHC hexachlorocyclohexane (BHCB)
γ - BHC (lindane) (BHCG)
α - chlordane (CHLA)
γ - chlordane (CHLG)
Dieldrin (DIEL)
DMDT Methoxychlor (DMDT)
Endosulfan I (END1)
Endosulfan II (END2)
Endrin (ENDR)
Endosulfan sulfate (ENDS)
Heptachlorepoxide (HEPE)
Heptachlor (HEPT)
Mirex (MIRX)
Oxychlordane (OCHL)
OP - DDT (OPDT)
PCB, Total (PCBT)
PP - DDD (PPDD)
PP - DDE (PPDE)
PP - DDT (PPDT)
2,4,5 - Trichlorphenoxyacetic acid (245T)
2,4 - Dichlorophenoxyacetic acid (324D)
2,4 - Dichlorophenoxybutyric acid (24DB)
2,4-D Propionic acid (24DP)
Dicamba (DICA)
Picloram (PICL)
Silvex (SILV)
Hexachlorobenzene (2HCB)
2,3,4 - Trichlorophenol (3234)
2,3,4,5 - Tetrachlorophenol (2345)
2,3,5,6 - Tetrachlorophenol (2356)
2,4,5 - Trichlorophenol (3245)
2,4,6 - Trichlorophenol (3246)
Pentachlorophenol (PCPH)

*Coded symbols used in Annex 1
Based on last 4 characters of the MOE Laboratory Information System (LIS).

2.3 Event Description

The three wet events sampled all occurred in the fall, the first on October 20 and the last on November 21. Typical hydrographs at representative sites are presented in Figures 4, 5 and 6. These figures show the hydrographs of the events observed in the field as derived from the Water Survey of Canada (WSC) gauges at Stations 2, 5 and 7* together with information on the duration of rainfall and the sampling period.

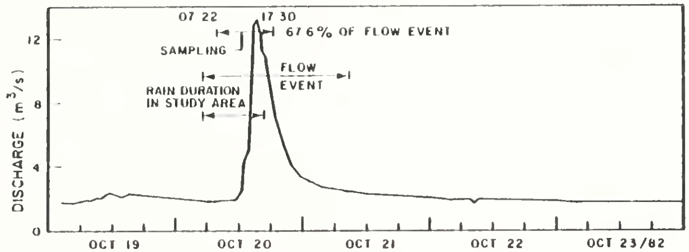
The first event was a small, well defined short rainfall event mainly in the lower part of the Humber River. The event was preceeded by a long (>8-day) dry spell. Data from Site 10 show no impact on the river flow at this location indicating little rural runoff. Sampling was initiated prior to any rise in the hydrograph and continued through and beyond the peak. At stations on the main stem of the Humber the flow increase was quite modest as shown in the hydrograph for Site 7 where the increment above the base flow (of 3.2 m^3/s) was about 1.8 m^3/s.

In the second event, the sampling period covered the initial runoff period and continued through the peak flow. In this case the sampled event had been preceeded by a series of relatively intense but short duration storms with peak flows up to twice the peak of the sampled event. There was, therefore, no dry antecedent period. Low intensity rainfall continued throughout the total period of sampling.

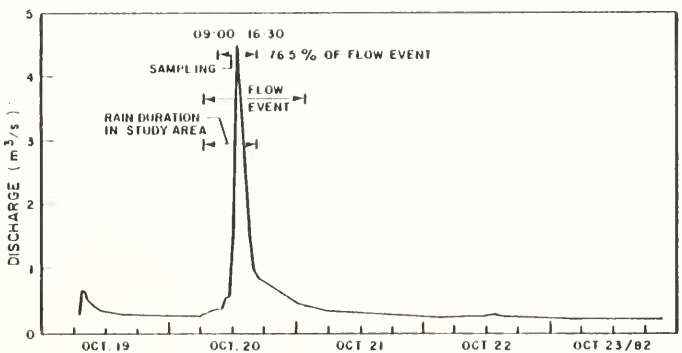
The final event was intermittent, producing more than one discharge peak. The sampling period was confined to the second peak. Peak flows were generally intermediate between the low flows of Event 1 and the highest sampled flows of Event 2. The precipitation in the latter case was mixed rain and snow. This event was preceeded by a long (>10-day) dry period.

Table 3 summarizes the precipitation characteristics of the three wet events while Table 4 shows the relative volumes of base flow and direct runoff** for the Humber River stations.

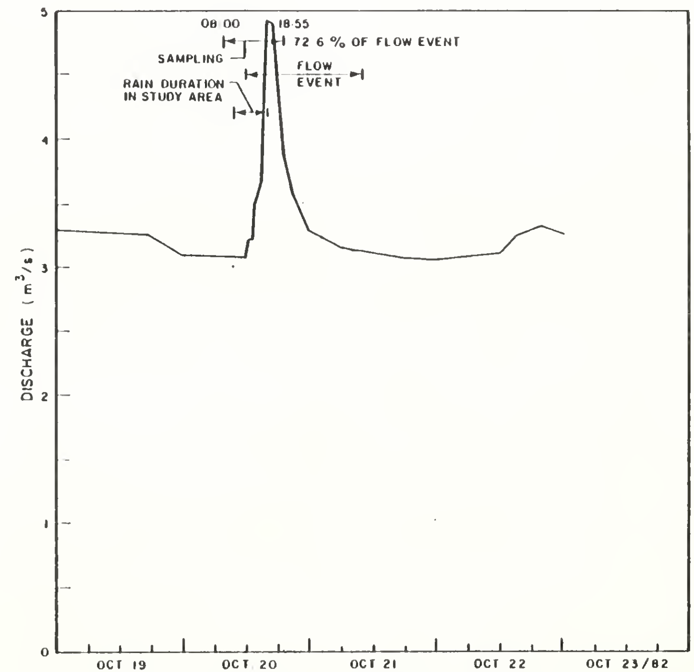
* The WSC gauge at Site 7 was only operational for the first event.
**Total volume = base flow plus direct runoff.



WSC GAUGE SITE - DON R. AT TODMORDEN
NEAR SAMPLING STATION 2



WSC GAUGE SITE - BLACK CREEK AT WESTON RD.
NEAR SAMPLING STATION 5



WSC GAUGE SITE - HUMBER AT WESTON RD.
NEAR SAMPLING STATION 7

FIG. 4

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WET EVENT No. 1

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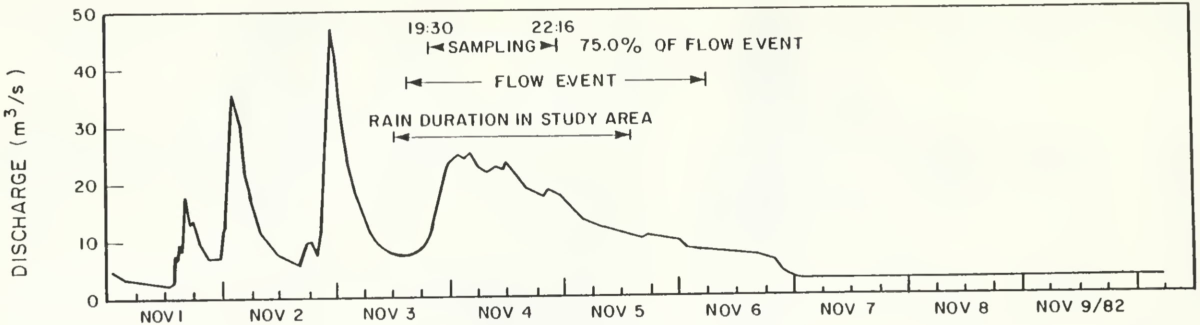
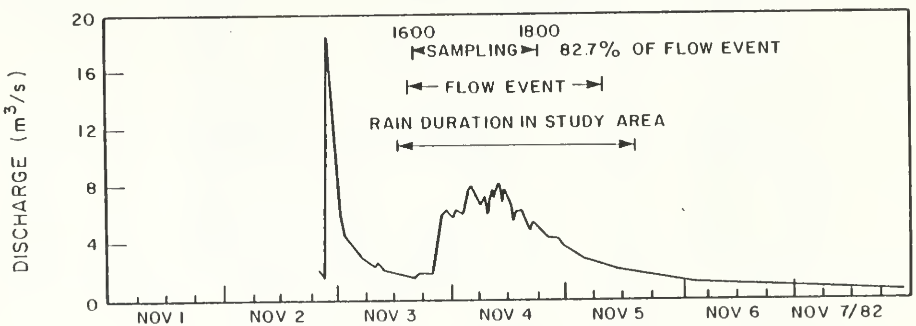


WSC GAUGE SITE - DON R. AT TODMORDEN
NEAR SAMPLING STATION 2



WSC GAUGE SITE - BLACK CREEK AT WESTON RD.
NEAR SAMPLING STATION 5

FIG. 5

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WET EVENT No. 2

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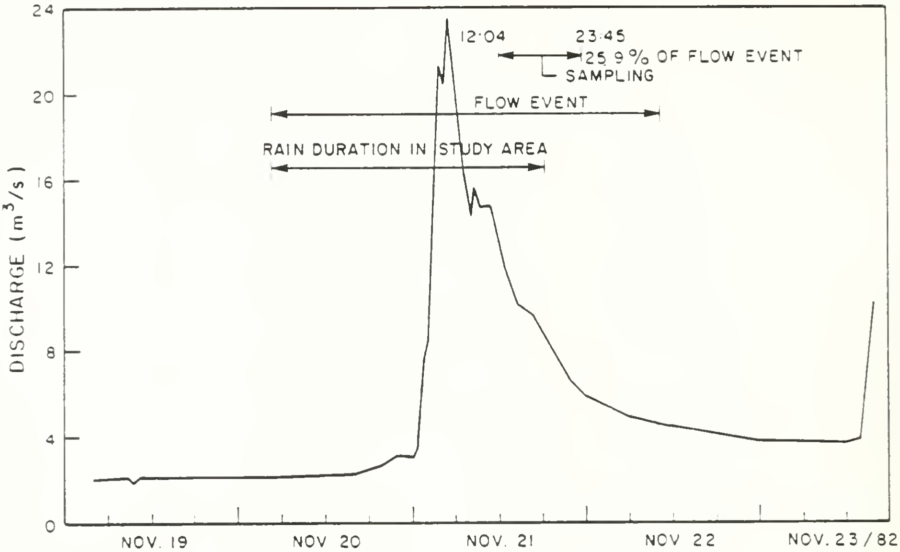
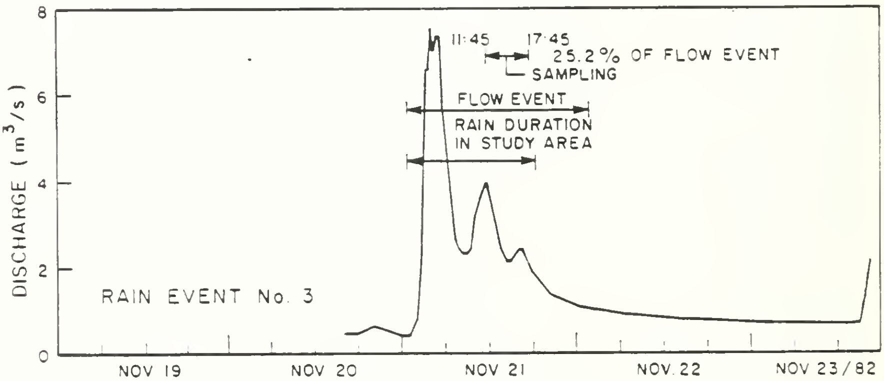


WSC GAUGE SITE - DON R. AT TODMORDEN
NEAR SAMPLING STATION 2



WSC GAUGE SITE - BLACK CREEK AT WESTON RD
NEAR SAMPLING STATION 5

FIG. 6

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TORONTO AREA WATERSHED MANAGEMENT STUDY - TAWMS 82

WET EVENT No.3

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Table 3: PRECIPITATION EVENT CHARACTERISTICS*

Total*** Event	Precipitation (mm)	Maximum Hourly Intensity (mm)	Duration (h)
No. 1	8.6	2.8	3
No. 2	25	1.8	27
No. 3**	7.9	2.7	6
	3.2	1.0	9

* For Urban Humber River portion of the study area only.
** Intermittent showers separated by 2 hours.
***Sampled event.

Table 4: FLOW EVENT CHARACTERISTICS

	Event No. 1		Event No. 2		Event No. 3	
Station	Total Volume (m^3 x 10^3)	Runoff/ Base Flow Ratio	Total Volume (m^3 x 10^3)	Runoff/ Base Flow Ratio	Total Volume (m^3 x 10^3)	Runoff/ Base Flow Ratio
3	475	0.18	15 500	3.43	7 590	1.52
5	85.5	3.17	1 970	3.35	359	3.53
6	343	0.14	13 200	3.33	6 690	1.49
7	325	0.10	12 700	3.24	6 500	1.45
8	84.5	0.11	4 240	3.47	1 770	2.84
9	110	0.063	7 450	2.39	4 560	0.89
10	84.9	0.011	6 360	2.57	4 000	0.95
11	48.3	2.38	1 390	2.73	249	2.76

3. DATA SUMMARY

Complete water quality results are contained in Annex 1. The values shown in Table 5 are arithmetic means calculated separately for dry and wet events at each station.

The parameters shown in Table 5 are arranged into four groups. The first group, the conventional water quality parameters, comprises the first seven parameters. The next seven parameters, make up the second group, the inorganic parameters. The third group, the bacteria, includes fecal coliforms and fecal streptococci. The last group, the pesticides and organic parameters, contains thirty-five parameters. Only seventeen of these were detected during TAWMS'82 and only the pesticides and organics actually detected are summarized in Table 5.

The stations shown in Table 5 are grouped into Humber River stations, Don River stations, and Mimico Creek stations. The Humber River stations are further divided into mainstem Humber, West Humber, and Black Creek stations. Within each group in Table 5, upstream stations are placed to the left of downstream stations. Arranging the stations by degree of urban development would result in a similar ordering within each group because urbanization is greater in the lower reaches of the river systems.

Note that many inorganic parameter means and most pesticide or organic parameter means shown in Table 5, were calculated using one or more values that were higher than the true value for the parameter. This occurred when the material was present in the sample at a concentration below the detection limit of the analytical technique. In these instances, the laboratory reported the detection limit as the value for the parameter along with a note that the true value was actually less than that reported. Consequently, those parameter means in Table 5 that are accompanied by an asterisk, are probable overestimates.

For most parameters, the wet event mean is higher than the dry event mean at a given station. The reverse is true, however, for ammonia, pH, and residue filtrate.

TABLE 5

DATA SUMMARY - ARITHMETIC MEANS OF DATA IN ANNEX 1

Parameter			Humber River								Don River		Mimico
			Mainstem Humber					West Humber	Black Creek		Taylor Creek	Don River	Mimico Creek
			10	9	7	6	3	8	11	5	1	2	4
BOD_5	(mg/L)	dry	0.86	0.82	1.12	1.02	0.98	0.68	1.43	1.75	0.97	8.58	0.94
		wet	1.13	1.57	1.63	1.54	1.76	2.70	5.58	8.35	2.66	5.61	5.97
NH_3 (un-ionized; mg/L as N)		dry	0.0011	0.0022	0.0034	0.0036	0.0046	0.0026	0.0052	0.0007	0.0040	0.0232	0.0051
		wet	0.0056	0.0026	0.0009	0.0006	0.0013	0.0008	0.0035	0.0022	0.0006	0.0048	0.0018
pH		dry	8.40	8.40	8.52	8.48	8.46	8.48	8.26	8.34	8.26	7.54	8.27
		wet	8.37	8.40	8.34	8.32	8.30	8.29	7.95	7.83	7.95	8.08	7.92
Filtered P	(mg/L)	dry	0.0058	0.0058	0.0052	0.0055	0.0042	0.0035	0.0975	0.1875	0.0160	0.0615	0.0045
		wet	0.0234	0.0487	0.0217	0.0222	0.0230	0.0276	0.0533	0.1302	0.0529	0.0895	0.0887
Unfiltered total P	(mg/L)	dry	0.020	0.023	0.021	0.021	0.020	0.018	0.169	0.270	0.038	0.245	0.022
		wet	0.150	0.253	0.177	0.176	0.205	0.126	0.340	0.510	0.190	0.413	0.378
Residue filtrate	(mg/L)	dry	360.	381.	358.	374.	430.	471.	912.	1 028.	866.	696.	724.
		wet	366.	356.	369.	376.	386.	413.	356.	405.	406.	417.	390.
Residue particulate	(mg/L)	dry	16.20	5.72	9.80	12.60	5.22	2.52	12.81	9.58	4.97	12.30	26.75
		wet	111.75	132.03	124.68	122.72	122.50	67.39	135.53	104.02	52.15	135.19	92.55
Cadmium	(mg/L)	dry	0.0003*	0.0002*	0.0002*	0.0002*	0.0002*	0.0003*	0.0012*	0.0004*	0.0004*	0.0003*	0.0002*
		wet	0.0003*	0.0002*	0.0003*	0.0003*	0.0004	0.0002*	0.0005	0.0009	0.0005	0.0007	0.0007*
Chromium	(mg/L)	dry	0.002	0.002	0.002	0.004	0.004	0.002	0.005	0.030	0.004	0.010	0.006
		wet	0.005	0.008	0.006	0.006	0.007	0.005	0.009	0.014	0.007	0.010	0.023
Copper	(mg/L)	dry	0.008	0.006	0.006	0.006	0.008	0.008	0.014	0.018	0.014	0.013	0.014
		wet	0.011	0.022	0.014	0.013	0.029	0.013	0.023	0.029	0.044	0.036	0.022
Mercury	(µg/L)	dry	0.040*	0.040*	0.040*	0.040*	0.040*	0.040*	0.040*	0.040*	0.050*	0.040*	0.040*
		wet	-	0.032*	-	-	-	0.033*	0.071*	0.081	0.040*	0.054	0.033*
Nickel	(mg/L)	dry	0.001*	0.002	0.004	0.004	0.002	0.001*	0.002	0.010	0.003	0.012	0.002
		wet	0.003*	0.004*	0.007	0.004	0.005*	0.003*	0.008	0.011	0.005	0.020	0.013*
Lead	(mg/L)	dry	0.004*	0.003*	0.004*	0.006*	0.003*	0.004*	0.011	0.006	0.004*	0.032	0.006
		wet	0.008*	0.010*	0.011	0.012*	0.018	0.012	0.076	0.079	0.046	0.044	0.031*
Zinc	(mg/L)	dry	0.016	0.003	0.004	0.024	0.006	0.002	0.022	0.044	0.014	0.052	0.028
		wet	0.019	0.022	0.031	0.030	0.034	0.021	0.115	0.115	0.076	0.161	0.085
Fecal coliform	(counts/ 100 mL)	dry**	55	81	49	95	270	106	783	2 418	2 085	21 500	403
		wet**	311	594*	762	798	1 154*	878	1 554	9 160*	4 023*	9 318	1 902*
Fecal streptococci	(counts/ 100 mL)	dry**	35	69	55	101	89	45	247	230	214	1 012	285
		wet**	667	1 705	1 487	1 409	1 524*	1 221*	3 701	8 903*	2 596*	4 321	4 313
α-BHC	(ng/L)	dry	6*	2*	2*	2*	2*	2*	3	2*	2*	4*	4*
		wet	2*	5*	5	5*	5	5	10	10*	12	8*	12
β-BHC	(ng/L)	dry	-	-	-	-	-	-	-	-	-	3*	4*
		wet	-	2*	2*	2*	2*	-	4*	6*	6*	7*	6*
γ-BHC	(ng/L)	dry	-	2*	3*	-	-	3*	3	2*	-	6*	3*
		wet	4*	4*	4*	3*	3*	3*	10	4*	26	5*	7
α-chlordane	(ng/L)	dry	-	-	-	-	-	-	-	-	-	-	3*
		wet	-	-	-	-	-	-	2*	6*	6*	3*	3*
γ-chlordane	(ng/L)	dry	-	-	-	-	-	-	-	-	-	-	-
		wet	-	-	-	-	2*	-	3*	5*	3*	-	2*
Dieldrin	(ng/L)	dry	-	-	-	-	-	-	-	-	-	-	-
		wet	-	2*	-	-	-	-	-	3*	-	-	2*
Heptachlor	(ng/L)	dry	-	-	-	-	-	-	-	-	-	-	-
		wet	-	-	-	-	-	-	1*	-	-	-	-
Total PCB	(ng/L)	dry	-	-	-	-	-	-	-	-	-	-	-
		wet	-	-	25*	-	25*	-	22*	-	145*	75	100
DDE	(ng/L)	dry	-	-	-	-	-	-	-	-	-	-	-
		wet	-	-	-	-	-	-	1*	-	-	-	1*
DDT	(ng/L)	dry	-	-	-	-	-	-	-	-	-	-	-
		wet	8*	-	-	-	-	-	-	-	-	-	-
2,4-D	(ng/L)	dry	-	-	-	-	-	-	165*	-	-	285*	-
		wet	-	120*	215*	190*	206*	268*	328	-	249*	193*	122*
2,4-DP	(ng/L)	dry	-	-	-	-	-	-	-	-	-	-	-
		wet	-	-	-	-	-	127*	135*	-	166*	-	-
Dicamba	(ng/L)	dry	-	-	-	-	-	-	-	-	-	-	150*
		wet	-	-	-	-	-	103*	103*	-	-	-	-
Pichloram	(ng/L)	dry	-	-	-	-	-	-	-	-	-	-	-
		wet	-	-	112*	-	-	-	-	-	-	-	-
Silvex	(ng/L)	dry	-	-	-	-	-	-	-	-	-	-	-
		wet	-	62*	-	-	54*	-	50*	53*	56*	74*	-
Hexachlorobenzene	(ng/L)	dry	-	1*	-	-	-	-	-	-	1*	2*	1*
		wet	-	1*	1*	-	-	2*	3*	1*	2*	8	3*
Pentachlorophenol	(ng/L)	dry	-	-	-	-	-	-	-	-	-	75*	305
		wet	-	55*	55*	58*	-	55*	94*	157*	54*	-	111*

* One or more values reported by the laboratory as "actual result is less than the reported value" were used to calculate this number. Consequently, this mean is higher than the actual mean.

** Geometric means.

\- not detected.

The pH of an uncontaminated raindrop in equilibrium with atmospheric carbon dioxide is about 5.6. This is much lower than the dry weather surface water pH in the Toronto area, so it is not surprising that mean pH's of these rivers where lower during wet events.

The percentage of total ammonia in the un-ionized form is lower at lower pH. However, at most of the stations at which mean un-ionized ammonia was higher during dry events than during wet events, the behavior of total ammonia followed a similar pattern. Thus generally lower means of un-ionized ammonia during wet events cannot be attributed solely to lower pH's during wet events reducing the amounts of un-ionized ammonia relative to total ammonia.

Residue filtrate means were higher during dry events than during wet events at almost all stations. This suggests that the concentrations of the most abundant constituents (calcium, sodium, potassium, magnesium, chloride and carbonates) were lower in storm water than in base flow.

For most of the conventional water quality parameters and bacteria, the highest means are for data from Station 2 at the mouth of the Don River and Stations 5 and 11 on Black Creek.

The means shown in Table 5 give a general indication of parameter behavior. More can be shown by subjecting the data given in Annex 1 to additional analyses as described in Section 4.

4. DATA INTERPRETATION

4.1 Parameter Descriptions

The MOE has set water quality Objectives for the protection of aquatic life in Ontario's surface waters (MOE, 1978). Water quality data collected during the TAWMS'82 study were compared with these Objectives. If there was no MOE Objective for a parameter, a guideline for the protection of aquatic life cited by McNeely et al (1979) was used, if one existed.

When an observed value of a water quality parameter was higher than the Objective or guideline for that parameter, an exceedance was said to have occurred. In the following discussion, an exceedance factor was defined as the ratio of the observed value to the Objective or guideline. Exceedance factors were calculated only when an exceedance occurred, so the factors are always 1.0 or more. An average exceedance factor was calculated as the arithmetic mean of all exceedance factors at a particular station during a particular event. These were generated to facilitate comparisons between stations and between events. An overall average exceedance factor was calculated as the arithmetic mean of all average exceedance factors for a particular station. This was used as a general indicator of the magnitude of exceedance at the station.

Exceedances are discussed below for each parameter. The water quality Objective or guideline is included in parentheses after the parameter name. Tables 6 and 7 summarize exceedances and average exceedance factors for the TAWMS ('82) water quality data.

Fecal Coliforms (100/100 mL; MOE, 1978)

Bacteriological water quality indicators are groups of bacteria whose densities in water can be related quantitatively to the presence of sewage or fecal matter and, therefore, to the risk of contracting a disease from the pathogens contained therein (MOE, 1978). The fecal coliforms are one of these indicators. A potential health hazard exists if the fecal coliform geometric mean density for a series of water samples exceeds 100/100 mL. A series

Table 6. AVERAGE EXCEEDANCE FACTORS FOR ALL EVENTS

Dry Event 1

Parameter	Objective or Guideline	Humber River Stations: Mainstem Humber 10	9	7	6	3	West Humber 8	Black Creek 11	5	Don River: Taylor Creek 1	Don River 2	Mimico: Mimico Creek 4
Fecal coliforms	100/100 mL*		1.1	1.2***	3.0	5.2	1.4	15	14	41	690	7.4
BOD_5	10 mg/L**										1.2	
NH_3 (un-ionized)	0.02 mg/L*										1.9	
Total P	0.030 mg/L*							7.5	15	1.5	5.6	
Residue particulate	25 mg/L**											1.4
Cadmium	0.0002 mg/L*											
Chromium	0.1 mg/L*											
Copper	0.005 mg/L*	1.6	1.0	1.2	1.0	1.4	1.0	2.2	4.0	3.0	2.4	3.4
Mercury	0.0002 mg/L*											
Nickel	0.025 mg/L*											
Lead	0.025 mg/L*										2.0	
Zinc	0.030 mg/L*								1.3		2.3	
-BHC (Lindane)	10 ng/L*											
PCB	1 ng/L*											

Dry Event 2

Parameter	Objective or Guideline	Humber River Stations: Mainstem Humber 10	9	7	6	3	West Humber 8	Black Creek 11	5	Don River: Taylor Creek 1	Don River 2	Mimico: Mimico Creek 4
Fecal coliforms	100/100 mL*					1.4***		4.2	43	11·	67	22
BOD_5	10 mg/L**											
NH_3 (un-ionized)	0.02 mg/L*											
Total P	0.030 mg/L*							3.8	3.0	1.1	11	
Residue particulate	25 mg/L**											
Cadmium	0.0002 mg/L*	2.0	1.5	1.5	1.5		2.0	2.5	2.5	3.0	2.0	1.5
Chromium	0.1 mg/L*											
Copper	0.005 mg/L*	1.6	1.4	1.2	1.4	1.6	2.2	3.2	3.4	2.6	2.8	2.4
Mercury	0.0002 mg/L*											
Nickel	0.025 mg/L*											
Lead	0.025 mg/L*											
Zinc	0.030 mg/L*				1.4			1.0	1.6		1.2	1.1
-BHC (Lindane)	10 ng/L*										1.2	
PCB	1 ng/L*											

Wet Event 1

Parameter	Objective or Guideline	Humber River Stations: Mainstem Humber 10	9	7	6	3	West Humber 8	Black Creek 11	5	Don River: Taylor Creek 1	Don River 2	Mimico: Mimico Creek 4
Fecal coliforms	100/100 mL*	1.5	14	12	16	9.0	25	27	400	79	120	57
BOD_5	10 mg/L**						1.1	1.6	2.7	1.3	1.1	2.4
NH_3 (un-ionized)	0.02 mg/L*							1.2	1.1		2.0	
Total P	0.030 mg/L*	1.1	11	1.2	1.5		2.1	19	34	7.9	14	21
Residue particulate	25 mg/L**		2.6					11	7.2	2.6	2.4	2.7
Cadmium	0.0002 mg/L*	3.0	1.2		1.7	3.2	1.0	3.9	5.8	3.5	3.3	3.5
Chromium	0.1 mg/L*											
Copper	0.005 mg/L*	1.4	1.7	1.7	1.7	2.1	2.0	6.4	7.8	4.3	11	4.2
Mercury	0.0002 mg/L*							1.4***	1.2***			
Nickel	0.025 mg/L*										2.1	2.2
Lead	0.025 mg/L*		1.0					5.9	5.5	1.4	1.2	1.5
Zinc	0.030 mg/L*	1.5	1.5		1.3		1.3	6.2	5.5	2.2	8.9	2.4
-BHC (Lindane)	10 ng/L*									4.6	1.0	
PCB	1 ng/L*									22	50	100

Wet Event 2

Parameter	Objective or Guideline	Humber River Stations: Mainstem Humber 10	9	7	6	3	West Humber 8	Black Creek 11	5	Don River: Taylor Creek 1	Don River 2	Mimico: Mimico Creek 4
Fecal coliforms	100/100 mL*	2.8	2.1	4.6	4.0	13	3.3	4.6	14	11	37	4.2
BOD_5	10 mg/L**											
NH_3 (un-ionized)	0.02 mg/L*											
Total P	0.030 mg/L*	9.7	11	12	11	11	7.3	7.2	6.3	6.0	12	8.9
Residue particulate	25 mg/L**	9.0	9.3	11	9.2	9.8	4.5	3.3	3.1	4.0	7.7	4.8
Cadmium	0.0002 mg/L*	1.3	1.2	2.2***	1.6	2.4	1.2	1.6	2.7	2.1	3.2	3.0***
Chromium	0.1 mg/L*											
Copper	0.005 mg/L*	2.8	2.7	3.5***	2.7	9.2	2.8	3.3	3.3	4.8	4.3	4.3***
Mercury	0.0002 mg/L*											
Nickel	0.025 mg/L*											
Lead	0.025 mg/L*					1.3		1.8	2.1	2.7	1.6	1.8***
Zinc	0.030 mg/L*	1.0	3.2	1.6	1.3	1.6	1.2	2.0	2.1	2.3	2.5	2.5***
-BHC (Lindane)	10 ng/L*		1.0					1.5		1.4		
PCB	1 ng/L*									390	100	

Wet Event 3

Parameter	Objective or Guideline	Humber River Stations: Mainstem Humber 10	9	7	6	3	West Humber 8	Black Creek 11	5	Don River: Taylor Creek 1	Don River 2	Mimico: Mimico Creek 4
Fecal coliforms	100/100 mL*	7.3	7.1	8.4	8.1	12	8.2	46	150	140	280	38
BOD_5	10 mg/L**											
NH_3 (un-ionized)	0.02 mg/L*	5.6										
Total P	0.030 mg/L*	4.3	4.2	5.0	5.4	5.4	3.6	5.5	8.1	6.5	15	9.6
Residue particulate	25 mg/L**	4.0	4.1	4.0	5.0	2.6	3.1	2.6	2.7	2.5	8.1	4.6
Cadmium	0.0002 mg/L*	1.6	1.3	1.3	1.3	1.0	1.2	2.5	4.0	2.0	3.5	6.5***
Chromium	0.1 mg/L*											
Copper	0.005 mg/L*	2.7	11	3.7	3.9	3.5	3.1	3.6	5.2	2.4	6.1	4.9
Mercury	0.0002 mg/L*											
Nickel	0.025 mg/L*			1.4								
Lead	0.025 mg/L*							3.2	2.7	2.1	3.1	1.3***
Zinc	0.030 mg/L*		1.4	1.0	1.2	1.2		2.8	3.0	3.5	4.3	4.2
-BHC (Lindane)	10 ng/L*							1.3		1.6		1.8
PCB	1 ng/L*			40		40		30				

* Objective for the protection of aquatic life established by MOE (1978) with two exceptions.
1 - There is no firm objective for total P, this value given for total P is a general guideline
2 - The objective for fecal coliforms is for the protection of public health.

** The BOD_5 value is an indicator of organic pollution, not a water quality objective. The residue particulate value is a guideline for the protection of freshwater life. Both are cited in McNeely et al (1979).

***One or more values reported as "unreliable" or "approximate" by the lab were used to calculate this number.

Legend symbols used below: ▒ = > 50% OF SAMPLES EXCEEDED OBJECTIVE OR GUIDELINE; ≡ = ≤ 50% OF SAMPLES EXCEEDED OBJECTIVE OR GUIDELINE; ● = UNRELIABLE OR APPROXIMATE VALUE(S) EXCEEDED OBJECTIVE OR GUIDELINE; □ = THE ONE SAMPLE COLLECTED EXCEEDED OBJECTIVE OR GUIDELINE

DRY EVENT 1

PARAMETER / STATIONS	10	9	7	6	3	8	11	5	1	2	4
FECAL COLIFORMS		□	●	□	□	□	□	□	□	□	□
BOD_5										□	
NH_3										□	
TOTAL P							□	□	□	□	
RES PART											□
CADMIUM											
CHROMIUM											
COPPER	□	□	□	□	□	□	□	□	□	□	□
MERCURY											
NICKEL											
LEAD										□	
ZINC								□		□	
γ-BHC											
PCB											

DRY EVENT 2

PARAMETER / STATIONS	10	9	7	6	3	8	11	5	1	2	4
FECAL COLIFORMS					●		□	□	□	□	□
BOD_5											
NH_3											
TOTAL P							□	□	□	□	
RES PART											
CADMIUM	□	□	□	□		□	□	□	□	□	□
CHROMIUM											
COPPER	□	□	□	□	□	□	□	□	□	□	□
MERCURY											
NICKEL											
LEAD											
ZINC				□			□	□		□	□
γ-BHC										□	
PCB											

WET EVENT 1

PARAMETER / STATIONS	10	9	7	6	3	8	11	5	1	2	4
FECAL COLIFORMS	▒	▒	▒	▒	▒	▒	▒	▒	▒	▒	▒
BOD_5						≡	≡	▒	≡	≡	≡
NH_3							≡	≡		≡	
TOTAL P	▒	▒	▒	▒		▒	▒	▒	▒	▒	▒
RES PART		▒					▒	▒	▒	≡	▒
CADMIUM	≡	≡		▒	▒	▒	▒	▒	▒	▒	▒
CHROMIUM											
COPPER	▒	▒	▒	▒	▒	▒	▒	▒	▒	▒	▒
MERCURY							●	●			
NICKEL										▒	≡
LEAD		≡					▒	▒	▒	▒	▒
ZINC	≡	≡		≡	≡	≡	▒	▒	▒	▒	▒
γ-BHC									▒	≡	
PCB									≡	▒	□

WET EVENT 2

PARAMETER / STATIONS	10	9	7	6	3	8	11	5	1	2	4
FECAL COLIFORMS	▒	▒	▒	▒	▒	▒	▒	▒	▒	▒	▒
BOD_5											
NH_3											
TOTAL P	▒	▒	▒	▒	▒	▒	▒	▒	▒	▒	▒
RES PART	▒	▒	▒	▒	▒	▒	▒	▒	▒	▒	▒
CADMIUM	▒	▒	▒	▒	▒	▒	▒	▒	▒	▒	▒
CHROMIUM											
COPPER	▒	▒	▒	▒	▒	▒	▒	▒	▒	▒	▒
MERCURY											
NICKEL											
LEAD					≡		▒	▒	▒	▒	
ZINC	▒	≡	▒	▒	▒	≡	▒	▒	▒	▒	▒
γ-BHC							≡		≡		
PCB									□	▒	

WET EVENT 3

PARAMETER / STATIONS	10	9	7	6	3	8	11	5	1	2	4
FECAL COLIFORMS	▒	▒	▒	▒	▒	▒	▒	▒	▒	▒	▒
BOD_5											
NH_3	≡										
TOTAL P	▒	▒	▒	▒	▒	▒	▒	▒	▒	▒	▒
RES PART	▒	▒	▒	▒	▒	▒	▒	▒	▒	▒	▒
CADMIUM	▒	▒	▒	▒	▒	▒	▒	▒	▒	▒	▒
CHROMIUM											
COPPER	▒	▒	▒	▒	▒	▒	▒	▒	▒	▒	▒
MERCURY											
NICKEL											
LEAD			≡				▒	▒	▒	▒	▒
ZINC		≡	▒	▒	▒		▒	▒	▒	▒	▒
γ-BHC							▒		□		≡
PCB			≡		≡		□				

LEGEND

▒ > 50% OF SAMPLES EXCEEDED OBJECTIVE OR GUIDELINE

≡ ≤ 50% OF SAMPLES EXCEEDED OBJECTIVE OR GUIDELINE

● UNRELIABLE OR APPROXIMATE VALUE(S) EXCEEDED OBJECTIVE OR GUIDELINE

□ THE ONE SAMPLE COLLECTED EXCEEDED OBJECTIVE OR GUIDELINE

TABLE 7

ONTARIO MINISTRY OF ENVIRONMENT
TORONTO AREA WATERSHED MANAGEMENT STUDY - TAWMS 82

ACRES

OCCURRENCE OF EXCEEDANCES FOR ALL EVENTS

of at least ten samples per month per sampling location is recommended, but an increased sampling frequency is required when the water is used for recreational purposes or when the water is subjected to contamination or discharge.

Eighty-nine percent (49) of the fecal coliform geometric means exceeded the Objective.* The Objective was exceeded at every station during the wet events. The Objective was exceeded at most (16 of 22) stations during the dry events. Average exceedance factors were higher during wet events than during dry events at all stations except the mouth of the Don River. Highest overall average exceedance factors were determined for the mouth of the Don River (239), the mouth of Black Creek (124), and the mouth of Taylor Creek (56).

Fecal coliform bacteria are normally associated with the intestinal tracts of warm-blooded animals (McNeely et al, 1979). High fecal coliform counts thus indicate pollution by enteric wastes and, hence, indicate the possible presence of pathogens. The frequent exceedance of the total fecal coliform Objective reveals frequent pollution by enteric wastes in the TAWMS study area, particularly during wet events. Other studies of microbiological characteristics of urban storm water runoff in central Ontario (Environment Canada and MOE, 1978) have shown that fecal pollution in separate storm sewer systems is predominantly of nonhuman origin. Fecal pollution of Toronto watersheds might be from surface runoff through storm sewers as well as from domestic wastes through combined sewers. Indeed, the MOE has identified a number of dry weather storm sewer flows as containing elevated levels of fecal coliforms, with the suspected cause being illegal sanitary or industrial sewer connections to the storm sewers (MOE, 1983).

BOD_5 (10 mg/L; McNeely et al, 1979)

The 5-day biochemical oxygen demand (BOD_5) of a water sample is the amount of oxygen needed to oxidize the organic matter in the

*Caution - dry event exceedances and exceedance factors are based on single values, not on geometric means of a series of samples.

sample to a stable inorganic form by aerobic microbial decomposition (McNeeley et al, 1979). BOD_5 is an indicator of pollution by organic material. Waters with BOD_5 levels less than 4 mg/L are considered reasonably clean and waters with BOD_5 levels greater than 10 mg/L are considered polluted by degradable organic material. The MOE does not have an Objective for BOD_5.

Five percent (16) of the BOD_5 values exceeded the guideline. All but one 1 of the exceedances occurred during Wet Event 1. Over half (9) of the exceedances occurred on Black Creek and three occurred at the mouth of Mimico Creek. Most (5 of 7) of the average exceedance factors were less than two.

During Wet Event 1, the waters of Black and Mimico Creeks exhibited BOD_5 levels greater than the guideline, indicating that these waters were polluted by organic material. BOD_5 levels tend to be higher on the rising limb of the hydrograph at these stations.

NH_3 (0.02 mg/L as N; MOE, 1978)

Ammonia values reported by the MOE lab were for total ammonia (NH_4 and NH_3). These values were converted to un-ionized ammonia (NH_3) using the table on page 32 of MOE (1978), which gives estimates of the un-ionized fraction based on temperature and pH. The conversions were done using values of pH measured in the lab and a temperature value of 20°C. At a given pH, the percentage of un-ionized ammonia in water sample is lower at lower temperatures, so the calculated values of un-ionized ammonia are probably overestimates of the amounts actually present in the rivers where temperatures are lower.

The un-ionized ammonia Objective is based on toxicity to aquatic organisms. Three percent (7) of the un-ionized ammonia values exceeded the Objective. Most (5 of 7) of the exceedances occurred during Wet Event 1. Of these, three occurred on Black Creek and two occurred at the mouth of the Don River. All but one of the five average exceedance factors were 2 or less.

BOD_5 exceedances were also frequent at the times and places of ammonia exceedances, suggesting that the ammonia was associated with organic material and sanitary sewage, likely from combined sewer overflows.

The highest average exceedance factor for ammonia, 5.6, occurred at the rural station (10) in the Humber watershed. As the BOD_5 level was not high at the time of this ammonia exceedance, this ammonia might be attributable to inorganic fertilizers.

Total Phosphorus (0.030 mg/L; MOE, 1978)

Current scientific evidence is insufficient to develop a firm objective for total phosphorus at present (MOE, 1978). Accordingly, only general guidelines for phosphorus have been suggested. Excessive plant growth in rivers and streams should be eliminated at a total phosphorus concentration below 0.030 mg/L.

Eighty-nine percent (238) of the total phosphorus values exceeded general guidelines. The fraction of wet event values exceeding the guideline (0.93) was larger than the fraction of dry event values exceeding the guideline (0.36).

Exceedances were observed during all five events at four stations----both Black Creek stations and both Don River stations. Exceedance factors were generally higher during wet events than during dry events. Highest overall average exceedance factors were determined for the mouth of Black Creek (13), the mouth of Mimico Creek (13; wet events only), and the mouth of the Don River (9.5).

Dry event conditions are more likely to have greater overall influence on plant growth than are wet event conditions because dry events last longer and their conditions are generally more conducive to plant growth. During the dry events, exceedances of the phosphorus guideline occurred only on Black Creek, Taylor Creek and the Don River.

<u>Residue Particulate</u> (25 mg/L; McNeely et al, 1979)

The MOE does not have an Objective for residue particulate. A guideline for the protection of freshwater life of 25 mg/L is given in McNeely et al (1979).

Seventy-one percent (190) of the residue particulate values exceeded the guideline. All exceedances but one occurred during the wet events. The highest overall average exceedance factors were determined for four Humber River stations, as follows:

- Station 7 (7.5)
- Station 6 (7.1)
- Station 10 (6.5)
- Station 3 (6.2).

However, exceedances occurred most frequently at a different set of stations:

- Black Creek mouth (21 of 24 or 0.88)
- Mimico Creek mouth and Station 11 on Black Creek (20 of 23 or 0.87)
- Station 9 on the Humber River (21 of 26 or 0.81)
- Don River mouth (17 of 23 or 0.74).

The higher overall average exceedance factors of the first group result from particularly high average exceedance factors during Wet Event 2 for stations in this group. Wet Event 2 was preceded by 2 days of intermittent rain. Stations in the first group yielded no exceedances during Wet Event 1, which was preceded by dry weather. The stations in the first group are in less developed areas. The particularly high Wet Event 2 average exceedance factors of the first group could have resulted from erosion of soil particles from open areas and stream banks exacerbated by several consecutive days of wet weather. The more frequent exceedances of the second group probably resulted from more consistent urban sources (i.e., street surfaces) of particulate material during isolated storms.

During wet events, total phosphorus and residue particulate levels at stations in the first group correlated significantly (99 percent confidence level). This relationship appeared only at Station 5 in the second group.

Cadmium (0.0002 mg/L; MOE, 1978)

The Objective for cadmium was established to protect aquatic life. Eighty percent (106) of the cadmium values exceeded the objective. The fraction of wet event values exceeding the Objective (0.87) was larger than the fraction of dry event values exceeding the Objective (0.45). Exceedances occurred at 10 of the 11 stations during Dry Event 2, and exceedance factors for most (7) of these stations during this event were greater than or about the same as exceedance factors for the same stations during wet events. Highest overall average exceedance factors were determined for the mouth of Black Creek (3.8), the mouth of Mimico Creek (3.5*) and the mouth of the Don River (3.0).

Cadmium concentrations did not appear to vary much with flow during wet events. Cadmium levels did not correlate with levels of any other parameters except at the stations on Black Creek. Here, at Stations 5 and 11, cadmium levels correlated significantly (99 percent confidence level) with levels of copper, lead, zinc, total phosphorus, and residue particulates. There was also significant negative correlation at a slightly lower confidence level (95 percent) between cadmium levels and pH at these two stations.

Chromium (0.1 mg/L; MOE, 1978)

The Objective for chromium was established to protect aquatic life.

There were no exceedances of the Objective for chromium.

Copper (0.005 mg/L; MOE, 1978)

The Objective for copper was established to protect aquatic life.

*Results classified as "approximate" were used in calculating this number. If "approximate" results are not used, this exceedance factor becomes 2.6.

The Objective for copper was exceeded at all stations during all events. For each station, wet event exceedance factors were generally higher than dry event exceedance factors.

The highest copper concentration, 0.130 mg/L, was observed three times--once at the mouth of the Don River, once at the mouth of the Humber River, and once at Station 9 on the Humber River. The two Humber River stations were not usually among the stations with the highest value of a water quality parameter.

Highest overall average exceedance factors for copper were determined for the mouth of the Don River (5.3), the mouth of Black Creek (4.7), the mouth of Mimico Creek (3.8*), and Station 11 on Black Creek (3.7).

At only a few stations was there any indication that copper concentrations varied with flow during wet events. In general, copper levels did not correlate with levels of any other parameters. However, at Stations 5 and 11 on Black Creek, copper levels correlated significantly (99 percent confidence level) with levels of cadmium, lead, zinc, total phosphorus, and residue particulates and at Station 7 on the Humber River copper levels correlated significantly (99 percent confidence level) with levels of chromium, mercury, BOD_5, and residue particulates. This might indicate a common source. There was also significant negative correlation at a slightly lower confidence level (95 percent) between copper levels and pH at the two Black Creek stations.

Mercury (0.0002 mg/L; MOE, 1978)

The Objective for mercury was established to protect aquatic life and to reduce accumulation of mercury in fish flesh that might be consumed by humans.

*An approximate result was used in calculating this number. If the approximate result is not used, the exceedance factor becomes 3.6.

Only three mercury values exceeded the Objective; however, each of these values was reported by the laboratory as "unreliable: contamination suspected" and the average exceedance factors were low (1.2, 1.4).

Nickel (0.025 mg/L; MOE, 1978)

The Objective for nickel was established to protect aquatic life.

Four nickel values exceeded the Objective, two from the mouth of the Don River, one from the mouth of Mimico Creek, and one from Station 7 on the Humber River. All nickel exceedances occurred during wet events. Average exceedance factors for nickel were 2.2 or less.

Lead (0.025 mg/L; MOE, 1978)*

The Objective for lead was established to protect aquatic life.

Thirty percent (39) of the lead values exceeded the Objective. All but one of the exceedances occurred during wet events. Most (31) of the exceedances occurred on the Don River and Black Creek. Highest overall average exceedance factors were determined for Station 11 on Black Creek (3.6), the mouth of Black Creek (3.4), the mouth of Taylor Creek (2.1), and the mouth of the Don River (2.0).

Lead levels correlated infrequently with levels of other parameters at most stations. However, at Stations 5 and 11 on Black Creek, lead levels correlated significantly (99 percent confidence level) with levels of cadmium, copper, zinc, and residue particulate. There was also significant negative correlation at a slightly lower confidence level (95 percent) between lead levels and pH at these two stations.

Zinc (0.030 mg/L; MOE, 1978)

The Objective for zinc was established to protect aquatic life.

*At alkalinities greater than 80 mg/L as $CaCO_3$.

Sixty-one percent (80) of the zinc values exceeded the Objective. The fraction of wet event values exceeding the Objective (0.66) was larger than the fraction of dry event values exceeding the Objective (0.32). The Objective was exceeded during all events at the mouths of the Don River and Black Creek. Highest overall average exceedance factors were determined for the mouth of the Don River (3.8), Station 11 on Black Creek (3.0), the mouth of Black Creek (2.7), and the mouth of Taylor Creek (2.7).

At Stations 3, 7, 8 and 11 zinc concentrations tended to increase with flow during wet events. Zinc levels correlated infrequently with levels of other parameters at most stations. However, at the two Black Creek stations (5 and 11), zinc levels correlated significantly (99 pecent confidence level) with levels of cadmium, copper, lead, total phosphorus, and residue particulate.

Pesticides and Other Organic Compounds

γ-BHC (lindane) is an organochlorine compound used as an insecticide and rodenticide (McNeely et al 1979). Its toxicity is related to its disruption of oxygen uptake. It can also accumulate in the fatty tissues of animals, so the Objective was established to protect aquatic life and to inhibit its accumulation in fish flesh that might be consumed by humans (MOE, 1978).

Thirteen percent (11) of the γ-BHC values exceeded the Objective of 10 ng/L. More than half (6) of the exceedances occurred in the Don River watershed--four at the mouth of Taylor Creek and two at the mouth of the Don River. Several (3) exceedances occurred at Station 11 on Black Creek. All exceedance factors but one were less than two.

All values for aldrin, chlordane, methoxychlor, DDE, 2,4-D, dicamba, and silvex were less than their Objectives or guidelines.

For dieldrin, endosulfan, endrin, heptachlor and heptachlorepoxide, mirex, PCB, and DDT and its metabolites, the Objective is less than the minimum measurable amount. Almost all values of each of these parameters were reported by the laboratory as the minimum measurable amount, indicating that nothing was detected. In these instances, exceedance was impossible to determine. There were two exceptions as follows.

1 - Heptachlor alone equaled the Objective for heptachlor and heptachlorepoxide at Station 11 on Black Creek during Wet Event 2.

2 - The objective for DDT and its metabolites was exceeded at Station 10 on the Humber River during Wet Event 3.

Heptachlor, heptachlorepoxide, and DDT are organochlorine compounds used as insecticides (McNeely et al, 1979). Their toxicity is related to their disruption of oxygen uptake. They can also accumulate in the fatty tissues of animals, so their Objectives were established to protect aquatic life and to inhibit their accumulation in fish flesh that might be consumed by humans or fish-consuming birds (MOE, 1978).

Polychlorinated biphenyls (PCB's) are toxic organic chemicals that are highly resistant to biological, chemical and thermal degradation (McNeely et al, 1979). They tend to accumulate in sediments and to be moved downstream during subsequent resuspension of sediments. PCB's collect in the fatty tissues of animals, which can have long-term harmful effects on aquatic life and human health. The Objective for PCB's (1 ng/L; MOE, 1978) was established with this in mind to provide guidance for dealing with past releases or accidental losses.

In the case of PCB's, 16 percent (10) of the samples not complicated by analytical interference or contamination exceeded the Objective. The remaining 84 percent were reported as the minimum detectable amount because no PCB was detected. However, the minimum detectable amount is 20 times the Objective, so it is impossible to say whether any of these other samples also exceeded the Objective. All exceedances occurred during the wet events. Over half (6) of the exceedances occurred at the two Don River watershed stations.

4.2 Distribution of Contaminants

As indicated in Section 4.1 there were notable variations in the magnitude and frequency of exceedances of many of the analyzed parameters related to particular subbasins. Having reviewed those parameters and their behavior, five were selected for more detailed consideration vis-a-vis their observed distribution and possible sources within the Humber River watershed. These five parameters are cadmium, copper, lead, fecal coliforms and total ammonia.

Lead, cadmium, and copper were trace metals that frequently exceeded their respective MOE Objectives. These three metals also represent a range of solubilities and associations with particulate materials. Fecal coliforms were considered because of recent concern about bacterial pollution of nearshore Lake Ontario by the Humber River. Total ammonia was considered as a representative nutrient that can also be toxic when present in large quantities.

To assess distribution of contaminants within the system and for the calculation of loadings, the subbasins described in Figure 3 were combined into six subbasins as follows:

- Upper Humber, the drainage area upstream from Station 10 (Drainage Area 10, Table 1)

- West Humber, the drainage area upstream from Station 8 (Drainage Area 8, Table 1)

- Upper Black Creek, the drainage area upstream from Station 11 (Drainage Area 11, Table 1)

- Lower Black Creek, the drainage area upstream from Station 5 but downstream from Station 11 (Drainage Area 5, Table 1).

- Mid Humber, the drainage area upstream from Station 7 but downstream from 10, excluding the West Humber drainage area (Drainage Areas 7 and 9, Table 1)

- Lower Humber, the drainage area upstream from Station 3 but downstream from 7, excluding the Black Creek drainage area. (Drainage Areas 3 and 6, Table 1).

Observed flow data for each sampling location and event did not cover the entire duration of the event hydrograph. Consequently, it was necessary to generate flows synthetically to produce the entire hydrograph needed for subsequent event mass flux calculations. A hydrologic model that combines appropriate hydrologic and meteorologic data to give flow estimates was used to generate the needed event hydrographs.

The hydrologic model used was the Hydrologic Simulation Program - Fortran (HSPF). This model was developed with the support of the US Environmental Protection Agency to permit a wide diversity of basin configurations to be modeled. Using HSPF, simulated flows were generated for each of the sampling stations on Black Creek and the Humber River. These simulated flows were compared with observed hydrographs and the model parameters were adjusted so the model could reproduce the observed flows. Then the model was used to generate dry weather flows and wet event hydrographs at each station in the Humber River watershed for the sampled dry and wet events.

The generated flows were used to calculate fluxes of the five parameters selected for further study. In this discussion, flux is used to mean the rate of mass transport. It is the product of parameter concentration and flow with dimensions of mass per unit time. Knowledge of fluxes allows the total quantity of a contaminant passing through a system per unit time, to be assessed. Concentrations alone do not permit this assessment to be made.

Fluxes were calculated for each of the two dry weather events by multiplying concentrations by generated flows. Then the average dry weather flux at each station was found by taking the arithmetic mean of the two dry weather fluxes at that station. Average dry weather flux from each of the six Humber subbasins was found by subtracting the fluxes into the subbasin from the flux out of the subbasin. Table 8 is a summary of dry event flux differences for the five selected parameters.

Table 8: AVERAGE DRY EVENT FLUX DIFFERENCES FOR SIX HUMBER SUBBASINS*

Parameter	Upper Humber	West Humber	Upper Black Creek	Lower Black Creek	Mid Humber	Lower Humber
Flow (m^3/s)	1.49	1.04	0.145	0.0300	0.400	0.180
Cadmium $\times 10^{-6}$ kg/s	0.451	0.341	0.230	-0.180	-0.0440	-0.140
Copper $\times 10^{-6}$ kg/s	11.9	9.81	1.80	1.56	-3.50	3.83
Lead $\times 10^{-6}$ kg/s	5.20	4.50	1.40	-0.300	0.700	-1.60
Fecal coliforms $\times 10^{-6}$ counts/s	0.818	1.07	1.70	2.15	0.0300	4.66
NH_4 $\times 10^{-6}$ kg/s	16.7	25.4	10.8	-9.90	51.1	49.7

*Average of two dry events.

For wet events, the flux was assumed to be made up of two parts, the base flow flux and the runoff flux. These fluxes were used to calculate base flow and runoff loadings for the entire wet event, where loading was taken to mean the total mass of contaminant flowing by the sampling station during the event. The steps in this procedure were as follows.

1 - Using the simulated hydrograph for the event (Figure 7), base flow (Q_b) was separated from combined flow (Q_c). This gave series of simulated combined flows, separated base flows, and runoff flows (Q_r) spaced at equal time intervals.

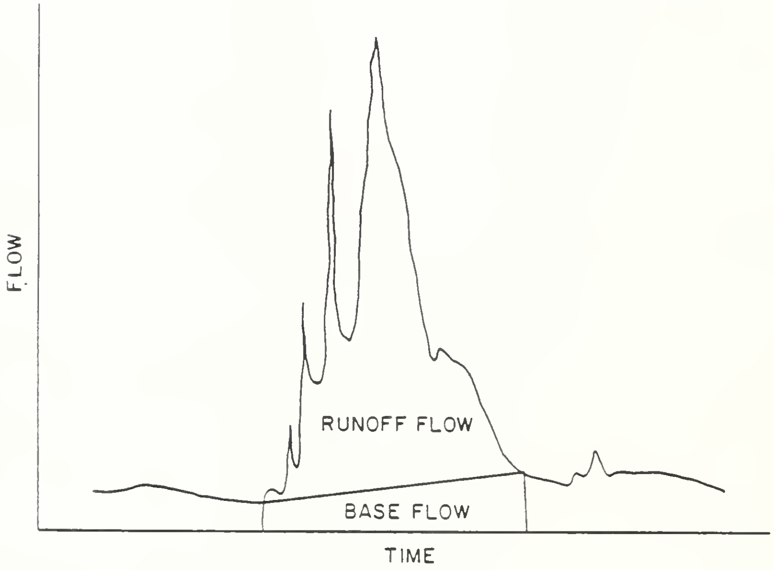

FIG. 7 - BASE FLOW SEPARATION

2 - A flow-weighted average of the two dry weather concentrations was computed (C_b).

3 - For each sampling time, base flow flux ($Q_b \cdot C_b$) was subtracted from combined flux ($Q_c \cdot C_c$) to give runoff flux.

4 - For each sampling time, base flow was subtracted from combined flow to give runoff flow.

5 - Total runoff loading for the sampled portion of the event (L_{sr}) was determined by numerically integrating the runoff fluxes using the trapezoidal rule for the integration.

6 - Total runoff flow volume for the sampled portions of the event (V_{sr}) was determined by numerically integrating the runoff flows using the trapezoidal rule for the integration.

7 - Average runoff concentration for the event (C_r) was computed by dividing L_{sr} by V_{sr}.

8 - Base flow loading for the entire event was calculated by multiplying each element in the time series of separated base flows for the event (Q_b) by the calculated base flow concentration (C_b) and the time interval between successive Q_b's and then summing the resulting products.

$$L_b = \Sigma(Q_b \cdot C_b \cdot \Delta T)$$

9 - Runoff loading for the entire event was calculated in a similar manner. Each element in the time series of runoff flows was multiplied by the average runoff concentration (Cr) and the time interval between successive Q_r's. The resulting products were added to give the runoff event loading,

$$L_r = \Sigma(Q_r \cdot C_r \cdot \Delta T)$$

Wet event loadings from each of the six Humber subbasins was found by subtracting the loadings into the subbasin from the loading out of that subbasin. Table 9 is a summary of wet event loading differences for the five selected parameters. Only wet events 1 and 2 are considered because wet event 3 sampling took place mainly on the falling limit of the hydrograph making the concentration information inadequate for the calculation of event loadings.

Table 9: WET EVENT LOADING DIFFERENCES FOR FOR SIX HUMBER SUBBASINS

Parameter		Upper Humber	West Humber	Upper Black Creek	Lower Black Creek	Mid Humber	Lower Humber
Event 1							
Flow (x $10^3 m^3$)	Wet	0.918	8.24	34.0	31.0	20.2	-21.4
	Base	84.0	76.3	14.3	6.13	135	86.9
Cadmium (kg)	Wet	0	0	0.0245	0.0858	0.0007	0.148
	Base	0.0254	0.0249	0.0227	-0.0169	0.0249	-0.0006
Copper (kg)	Wet	0.0037	0.168	1.35	2.42	0.852	-1.97
	Base	0.672	0.670	0.177	0.214	0.429	0.870
Lead (kg)	Wet	0.0112	0.930	5.22	6.81	0.651	-8.39
	Base	0.295	0.325	0.138	-0.0068	0.427	0.0285
Fecal coliforms (x 10^{12} counts)	Wet	0.843	2.16	1.36	252	3.12	-256
	Base	0.0461	0.0779	0.168	0.282	0.0683	0.632
NH_4 (kg)	Wet	1.68	0.176	6.19	54.0	-1.86	-57.0
	Base	0.940	1.85	1.07	-0.961	6.58	8.12
Event 2							
Flow (x $10^6 m^3$)	Wet	4.58	3.29	1.02	0.493	1.81	0.762
	Base	1.78	0.948	0.374	0.0772	0.264	0.0580
Cadmium (kg)	Wet	1.42	0.935	0.198	0.597	2.08	1.11
	Base	0.539	0.309	0.593	-0.464	-0.0855	-0.191
Copper (kg)	Wet	77.5	46.7	17.5	5.72	71.9	231
	Base	14.3	8.33	4.63	4.01	-4.62	-0.203
Lead (kg)	Wet	59.7	48.2	55.5	25.7	51.9	60.1
	Base	6.26	4.04	3.61	-0.710	0.326	-3.02
Fecal coliforms (x 10^{12} counts)	Wet	19.0	19.6	4.01	16.6	14.8	128
	Base	0.978	0.967	4.39	5.54	0.0050	-0.781
NH_4 (kg)	Wet	18.7	8.67	1.02	2.64	14.7	110
	Base	19.9	23.0	27.8	-25.5	52.1	55.8

These generated event loadings, broken down by subbasin, are presented below from two perspectives. In the first instance, the six subbasins are compared on the basis of relative contribution to total event loading. In the second, these loadings are normalized on an areal basis.

4.2.1 Relative Subbasin Contributions

Figure 8 shows, for each of the five priority parameters, the relative contributions of each of the six subbasins to the sum of the loadings from all the subbasins. These are presented as percentages for interbasin comparison. The base flow portion has been separated for comparison with the runoff contribution.

Several points should be borne in mind while interpreting this figure.

- This event followed a long dry period.

- Precipitation fell only in the lower portion of the watershed so that no runoff was measured from the rural subbasin above Site 10.

- Sampling at Station 3 was discontinued before the "event peak" had passed.

In general Figure 8 shows clearly that the runoff contribution was many times higher than that attributable to base flow. This indicates that contaminants accumulated during the preceeding dry period were indeed mobilized during the event. Because the large upstream rural catchment did not respond (produce runoff) in the first wet event, the relative importance of the small urban subbasins such as Black Creek is amplified. The large ammonia contribution noted from this drainage area is attributable to the effects of the combined sewer overflow system.

The negative loading differences noted for ammonia, coliforms and copper for the Lower Humber subbasin could be artifacts of the differencing procedure. Because sampling at Site 3 was

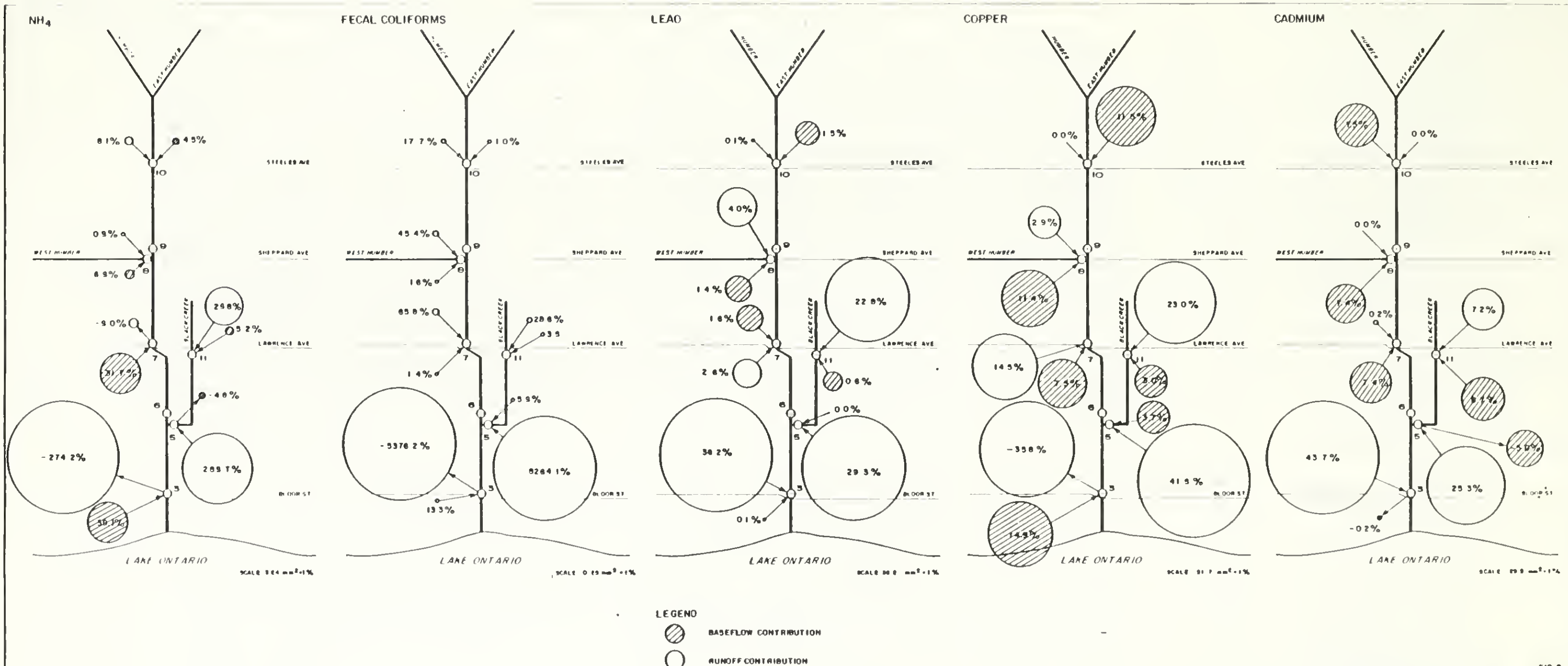

FIG 8

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TORONTO AREA WATERSHED MANAGEMENT STUDY – TAWMS 82
SUBBASIN CONTRIBUTIONS - WET EVENT I

discontinued prematurely, it is possible that the peak concentrations measured did not reflect total input from the upstream drainage areas. In the process of differencing the loadings, negative numbers could therefore be generated. For the same reason, the positive loadings noted for lead and cadmium are probable underestimates of actual local input.

A more detailed discussion of observed behaviors, is provided in Section 4.2.2.

Figure 9 shows the relative subbasin contributions during the second wet event. As was the case for the first wet event, sampling at Site 3 may not have been continued long enough thereby complicating the subbasin loadings reported for the Lower Humber. Unlike the first wet event however, rain fell throughout the Humber watershed so the rural contributions could be assessed. It is also of note that this event immediately followed an earlier rainfall. With a "prewashed" system one might have expected a very low runoff contribution of contaminants, however, for bacteria, lead and copper the base flow contribution was small in comparison to the runoff from all of the subbasins. This tendency also held for cadmium except in the Upper Black Creek subbasin where the runoff contribution was only one-third of the calculated base flow input. This apparent runoff dilution effect may indicate a specific dry weather source somewhere within the Upper Black Creek watershed.

The behavior of ammonia was distinctly different from that of the other parameters. Little ammonia was contributed by the runoff portion of the event for any of the middle and upper Humber subbasins with the single exception of Lower Black Creek where the base flow contribution was negative. This sink was also observed during the first wet event and its possible causes are discussed in Section 4.2.2. The overall implication of the ammonia behavior is that this soluble contaminant is easily washed from the system and had been largely "purged" by the rain prior to the sampled event. It is also of note that the largest runoff contributions of ammonia came from the predominantly rural catchments where sources such as fertilizers would be more dispersed.

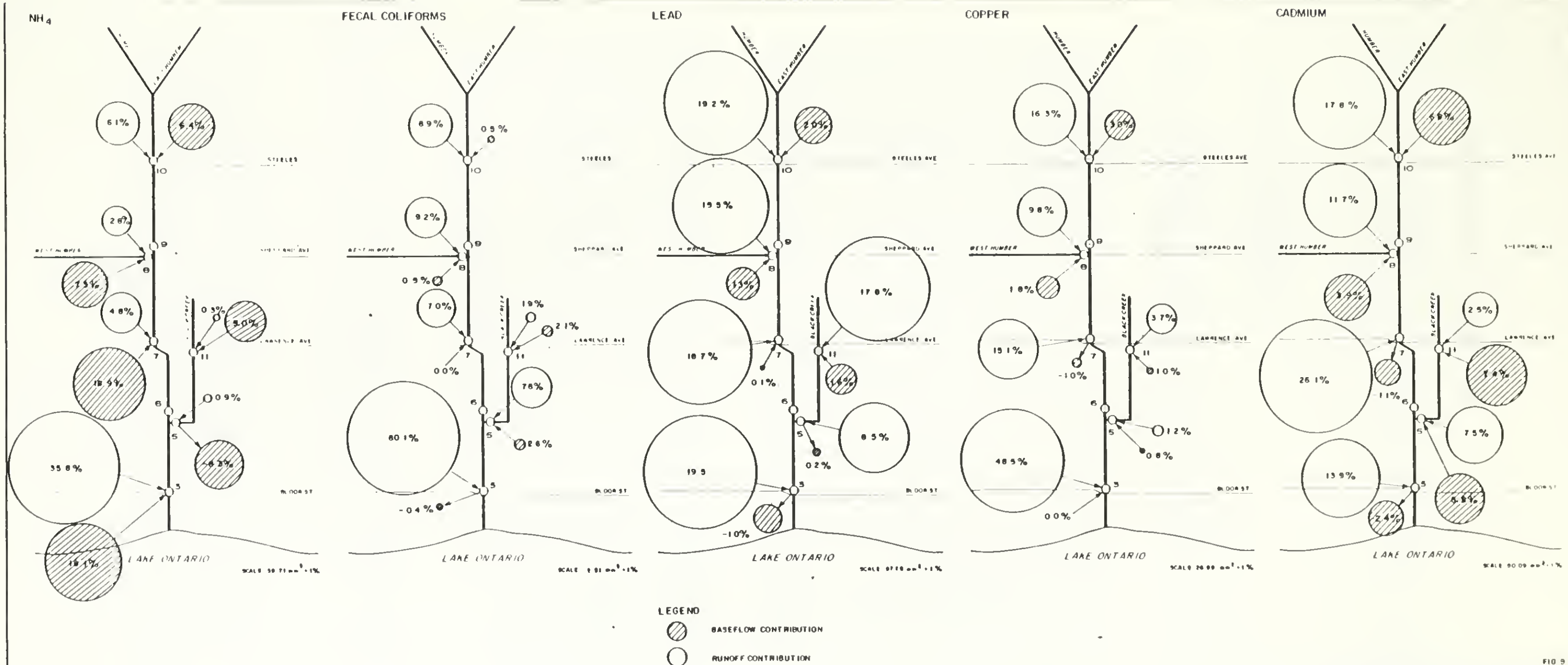

FIG 9

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SUBBASIN CONTRIBUTIONS - WET EVENT 2

4.2.2 Contributions by Unit Area

Since the six subbasins described earlier differ in size, fluxes were normalized on the basis of area to assess dry and wet event contributions in a more direct way.

Dry Weather Contributions

Table 10 shows the average dry weather fluxes per unit area for each of the six Humber River subbasins.

Flow (reported as millimetres of runoff) was greatest from the Mid Humber subbasin, which is about one-quarter open, one-quarter industrial, and one-half residential. Flow was least from the Lower Black Creek subbasin, which is mostly residential and open and from which, the runoff is directed via the combined sewer runoff interceptor. The second highest flow came from the Lower Humber subbasin, which is mostly residential and open, and the second lowest flow came from the Upper Humber subbasin, which is almost entirely open. There does not appear to be a clear relationship between land use and flow from subbasins.

Cadmium flux per unit area was greatest for the Upper Black Creek subbasin. The Mid Humber and Lower Humber subbasins tended to accumulate cadmium. The apparent sink for cadmium in Lower Black Creek cannot be verified. It results from one cadmium value that was reported as below normal detection limit. For these calculations, values reported as less than a detection limit were assumed to be equal to the detection limit, so all results based on these values overemphasize their contribution.

The greatest copper fluxes per unit area came from the Lower Humber and Lower Black Creek subbasins. The Mid Humber subbasin was a sink for copper during the dry events.

Lead, which has great affinity for particulate materials, showed dry weather fluxes similar to those shown by cadmium. Highest flux per unit area was from the Upper Black Creek subbasin, and the Lower Black Creek and Lower Humber subbasins accumulated lead. The

Table 10: AVERAGE FLUX PER UNIT SUBBASIN AREA FOR DRY WEATHER

Parameter	Upper Humber 570 km^2	West Humber 221 km^2	Upper Black Creek 50.4 km^2	Lower Black Creek 14.7 km^2	Mid Humber 41.4 km^2	Lower Humber 27.2 km^2
Runoff (mm/s)	2.61×10^{-6}	4.73×10^{-6}	2.88×10^{-6}	2.04×10^{-6}	9.66×10^{-6}	6.52×10^{-6}
Cadmium $\times 10^{-9}$ kg/(km^2.s)	0.791	1.54	4.56	-12.2	-1.06	-5.15
Copper $\times 10^{-9}$ kg/(km^2.s)	20.9	41.6	35.6	106	-84.4	141
Lead $\times 10^{-9}$ kg/(km^2.s)	9.12	20.4	27.8	-20.4	16.9	-58.8
Fecal coliforms Total counts/(km^2.s)	1.43×10^3	4.83×10^3	33.7×10^3	146×10^3	0.725×10^3	171×10^3
NH_4 $\times 10^{-9}$ kg/(km^2.s)	29.3	115	214	-673	1 230	1 830

chief difference between lead and cadmium flux distributions was that the Mid Humber was source of lead but a sink for cadmium during the dry events.

The highest fluxes per unit area of fecal coliforms came from the Lower Humber and Lower Black Creek subbasins. The more rural subbasins, Upper Humber, West Humber and Mid Humber, contributed far fewer fecal coliforms per unit area during dry weather. The Upper Black Creek flux per unit area seems rather high for a subbasin that is about half rural.

The largest contributors of total ammonia were the Mid and Lower Humber subbasins. The Lower Black Creek subbasin acted as a big sink for total ammonia. Nitrification, the microbial oxidation of ammonia to nitrate, is normally one of the main sinks of ammonia, but it is too slow a process to account for the loss of so much ammonia during the short time of travel between Stations 11 and 5. An industrial source of oxidant could account for the apparent rapid loss.

Wet Event Contributions

There was some difficulty in estimating wet event contaminant contributions from the Humber watershed subbasins, primarily because of the sampling problems mentioned earlier. The loadings per unit area for the Lower Humber subbasin were therefore not calculated for Wet Events 1 and 2. Event loadings were not attempted at all for the third wet event because there was some question regarding the adequacy of the sampling effort for the earlier part of the event hydrograph.

Tables 11 and 12 give total event loadings per unit subbasin area for selected parameters for Wet Events 1 and 2 respectively.

All subbasins for which loadings were calculated were sources of cadmium during both wet events. The largest sources were the Upper Black Creek and Lower Black Creek subbasins.

Table 11: TOTAL EVENT LOADING PER UNIT SUBBASIN AREA FOR WET EVENT 1

Parameter	Upper Humber 570 km^2	West Humber 221 km^2	Upper Black Creek 50.4 km^2	Lower Black Creek 14.7 km^2	Mid Humber 41.4 km^2	Lower Humber 27.2 km^2
Runoff (mm)	0.149	0.382	0.958	2.53	3.75	-
Cadmium $\times 10^{-3}$ kg/km^2	0.0446	0.112	0.936	4.70	0.619	-
Copper $\times 10^{-3}$ kg/km^2	1.18	3.79	30.4	180	30.9	-
Lead $\times 10^{-3}$ kg/km^2	0.537	5.68	106	464	26.0	-
Fecal coliforms Total counts/km^2	1.56×10^9	10.1×10^9	30.4×10^9	$17\ 200 \times 10^9$	76.9×10^9	-
NH_4 $\times 10^{-3}$ kg/km^2	4.60	9.18	144	3 610	114	-

- Not calculated.

Table 12: TOTAL EVENT LOADING PER UNIT SUBBASIN AREA FOR WET EVENT 2

Parameter	Upper Humber 570 km^2	West Humber 221 km^2	Upper Black Creek 50.4 km^2	Lower Black Creek 14.7 km^2	Mid Humber 41.4 km^2	Lower Humber 27.2 km^2
Runoff (mm)	11.1	19.1	27.7	38.9	-	-
Cadmium $\times 10^{-3}$ kg/km^2	3.44	5.62	15.7	9.06	-	-
Copper $\times 10^{-3}$ kg/km^2	161	249	440	663	-	-
Lead $\times 10^{-3}$ kg/km^2	116	236	1 170	1 700	-	-
Fecal coliforms Total counts/km^2	35.0×10^9	92.8×10^9	167×10^9	$1\ 510 \times 10^9$	-	-
NH_4 $\times 10^{-3}$ kg/km^2	67.7	143	572	-1 560	-	-

- Not calculated.

The largest total event loadings for copper came from the Upper and Lower Black Creek and Mid Humber subbasins. The smallest loadings came from the Upper Humber and West Humber subbasins for both events. The Mid Humber was a source of copper during Wet Event 1. This differs from the dry weather situation when the Mid Humber was a sink for copper.

All subbasins for which loadings were calculated were sources of lead during both wet events. The largest sources were the Upper and Lower Black Creek subbasins. The Lower Black Creek subbasin was a lead sink during dry weather.

The largest contributor of fecal coliforms during Wet Event 1 was the Lower Black Creek subbasin and the second largest contributor was the Mid Humber subbasin. During Wet Event 2, the largest contributor was the Upper Black Creek subbasin.

The Upper Black Creek subbasin was a large source of ammonia during both wet events as it was during dry weather. The Lower Black Creek subbasin was a sink for ammonia during the second wet event, as it was during dry weather. However, during the first wet event this subbasin was the largest source of ammonia of all the subbasins for which total event loadings were calculated.

During wet events, the two Black Creek subbasins were the largest contributors on a unit area basis of all five of the selected parameters considered. This implies that during wet events the combined sewer overflow in the Lower Black Creek subbasin is not the only significant contributor of these parameters.

5. DISCUSSION

Table 13 shows mean runoff concentrations of selected parameters for three Humber River drainage areas compared with selected Ontario urban drainage areas. The parameters listed are those most commonly assessed in studies of urban runoff.

The three Humber catchment drainage areas were selected to represent three degrees of urbanization. The first drainage area, the Rural Humber, is that portion of the Humber catchment upstream from Station 10. This drainage area is almost 100 percent open. The Upper Urban Humber is that portion of the Humber catchment upstream from Station 7. Although this drainage area is also mostly open, it is more urbanized than the Rural Humber drainage area. The third drainage area, Black Creek, is the entire Black Creek catchment. It is the most urbanized of the three Humber drainage areas considered and it alone receives combined sewer overflows.

Average runoff concentrations completed for the first two wet events sampled were used to calculate the arithmetic mean runoff concentrations for these three drainage areas.

The mean runoff concentrations generally increased with increasing urbanization in the Humber catchment. BOD_5 went from 0.795 mg/L in the Rural Humber to 11.0 mg/L in Black Creek, fecal coliforms went from 10 700 counts/100 mL in the Upper Urban Humber to 195 000 counts/100 mL in Black Creek, and lead went from 0.013 mg/L in the Rural Humber to 0.119 mg/L in Black Creek. Total phosphorus was also highest in Black Creek, but it was lowest in the Upper Urban Humber, not in the Rural Humber.

Ammonia nitrogen was highest in the Rural Humber and lowest in the Upper Urban Humber. Residue particulate was highest in the Upper Urban Humber and lower in the Rural Humber.

Mean runoff concentration of BOD_5, for the Upper Rural Humber was less than that calculated for surface runoff from Ontario Great Lakes communities and less than those reported for the Brucewood Test

Table 13: COMPARISON OF RUNOFF CONCENTRATIONS FOR SELECTED ONTARIO DRAINAGE AREAS

Catchment	Rural Humber*	Upper Urban Humber*	Black Creek*	Guelph West	Brucewood Test Catchment**	Windsor Storm Sewer Discharge	Calculated Flow-Weighted Means for Ontario Great Lakes Communities	
							Surface Runoff	Combined Sewer Overflow
Drainage Area	570 km^2	833 km^2	65.1 km^2		0.195 km^2	0.36 km^2		
Land Use	100% open	4% low density 1% high density 4% industrial 91% open	37% low density 11% high density 14% industrial 38% open	37% low density 8% high density 33% industrial 22% open	100% low density (separate sewers)	100% low density		
Source Reference	+			Waller & Novak, 1979	James F. MacLaren, 1980	Hartt, 1973	Waller and Novak, 1979	
BOD_5 (mg/L)	0.795	2.26	11.0	13.9	7.5 (5)	12	14	41
NH_3-N (mg/L)	0.913	0.002	0.464	-	0.28 (5)	0.087	-	-
Total P (mg/L)	0.297	0.266	0.730	0.35	0.17 (5)	0.98	0.35	1.4
Residue particulate (mg/L)	137	193	168	195	79 (5)	305	170	190
Fecal coliforms (counts/100 mL)	4.61×10^4	1.07×10^4	1.95×10^5	-	1 062 (4)	2.41×10^6	5×10^3	1×10^6
Lead (mg/L)	0.013	0.035	0.119	-	0.32 (5)	-	-	-

- Not determined
* Arithmetic mean of Wet Events 1 and 2 event average runoff concentrations only.
**Arithmetic mean of means for events in October and November 1974. The numbers in parentheses represent the number of individual items used to calculate the mean.
+TRAMS 82 Program.

Catchment and Windsor storm sewer discharge. Total phosphorus in the Upper Urban Humber was less than in Windsor storm sewer discharge but more than in Brucewood Test Catchment discharge. Ammonia mean runoff concentration was much lower in the Upper Urban Humber than in the Brucewood or Windsor residential catchments. Residue particulate and fecal coliform mean runoff concentrations in the Upper Urban Humber were much greater than those from Brucewood storm sewers but much less than those from Windsor storm sewers.

Mean runoff concentrations of BOD_5 and residue particulate were about the same as those calculated for surface runoff from Ontario Great Lakes communities. Total phosphorus and fecal coliforms were higher in Black Creek than in surface runoff from Great Lakes communities as a result of combined sewer overflow in Black Creek. The land use in the Black Creek drainage area is similar to that in the Guelph West drainage area, and BOD_5 and residue particulate concentrations are roughly the same in the two areas. However, mean runoff concentrations of total phosphorus for Black Creek was about two times that for Guelph West. This is because of the combined sewer overflow into Black Creek.

6. SUMMARY AND CONCLUSIONS

6.1 Summary of the Program

As part of the TAWMS program, a field data collection program was carried out during the fall of 1982 for the MOE, to further define water quality problems on the Humber River. This was to provide input to the development of a comprehensive water management strategy. Limited data were also collected for the Don River and Mimico Creek. A field monitoring network, distinguishing between rural and urban land uses, was established, with emphasis placed on the urbanized portions of the watersheds.

Streams in urbanized areas receive flow inputs and associated pollutant loadings from storm sewers and combined sewer overflows. Storm sewer systems convey surface water runoff and pollutants washed off urban surfaces during rainfall events. These systems also contribute flows in dry weather periods consisting of infiltration, cooling waters and from other sources such as illegal industrial and sanitary inputs, leakages and spills. Combined sewers such as those in the Lower Black Creek drainage areas contain domestic and industrial sewage mixed with stormwater runoff. These overflow intermittently, contributing pollutant loadings to receiving streams during rainfall events.

As many of the potential sources were therefore expected to contribute contaminants during runoff from rainfall (wet events), the program examined water quality during two dry weather (low flow) as well as three wet events.

6.2 Conclusions

As a means of evaluating observed water quality problems, values of parameters were compared with Ontario Ministry of the Environment's Provincial Water Quality Objectives. Exceedances of the Objectives occurred most often for fecal coliforms, cadmium, copper, lead and and zinc. In addition, the guideline for total phosphorus concentrations that could cause excessive plant growth in rivers and streams was often violated.

The Objective for fecal coliform was exceeded at every station during the wet events. The highest exceedances also occurred during the wet events with the highest values in the Humber River system being consistently detected on the Lower Black Creek just downstream from combined sewer overflow. However, even during low flow periods, there are continuing sources of fecal contamination. These cannot be accounted for by the combined sewer contribution, so other sources of fecal contamination during low flow periods are implicated.

Among the metals examined, nickel, mercury and chromium either met or exceeded only marginally and/or infrequently, their respective Objectives. Of those remaining, cadmium exceeded its Objective more frequently during high flows than during low. For example, 87 percent of all wet event cadmium samples exceeded the Objective while only 45 percent of dry weather samples exceeded. The Objective for copper was exceeded at all stations during all events. Wet event copper concentrations were generally higher than dry weather concentrations. Thirty percent of samples analyzed for lead exceeded the Objective. All but one of the exceedances occurred during wet weather. Sixty-six percent of the wet weather zinc samples exceeded the Objective while only 32 percent of the dry event values did not meet the Objective.

Pesticides and other organic compounds were analyzed. Most parameters were not detected or were less than Objectives or guidelines with a few exceptions. Occasionally lindane (-BHC), heptachlor, DDT and its metabolites and PCB's exceeded or equalled the Objectives. All exceedances except one lindane value occurred during wet weather. Thirteen percent of the lindane values exceeded the Objective. Most of the exceedances occurred in the Don River watershed. Several occurred in Upper Black Creek of the Humber watershed. One sample for heptachlor equalled the Objective for heptachlor and heptachlorepoxide in Upper Black Creek. The Objective for DDT and its metabolites was exceeded once on the Upper Humber watershed above Steeles Avenue. PCB was detected and exceeded the Objective in six samples on the Don watershed, three samples on the Humber watershed and one sample on Mimico Creek.

Highest levels of most parameters generally occurred at the mouths of Black Creek (Station 5), Don River (Station 2), Taylor Creek (Station 1) and Mimico Creek (Station 4) and on Upper Black Creek (Station 11).

In the Humber River watershed, the MOE Objectives were most often exceeded at the outflow from the Black Creek subbasin. The influence of the combined sewer overflows, containing domestic and industrial sewage mixed with stormwater runoff, was observed in the lower Black Creek watershed during the high flow periods. The upper portion of the Black Creek watershed also appears to be a larger contributor of contaminants than might be expected for a watershed designated to receive only separated stormwater discharges.

The rural portions of the Humber watershed contributed nutrients and residue particulates during the high flow (high rainfall volume event) periods but generally provided a moderating influence on overall water quality. During low flow periods, elevated copper concentrations were noted.

The most densely urbanized areas contributed higher concentrations of contaminants than did the predominantly open areas and in general, concentrations of most parameters were higher during the wet events than during the low flow periods.

Using a combination of concentration and flow information, mass fluxes* were calculated to better describe the distribution and behavior of contaminants. Wet weather events produced the highest mass fluxes for most parameters and in the case of fecal coliforms, the highest concentrations were consistently detected on Lower Black Creek. But when the mass fluxes of this contaminant were estimated it was found that the Lower Black Creek subbasin did not behave consistently through all three wet events. This suggests that the type of rainfall event has a significant

*Mass flux = concentration x flow

effect on combined sewer contributions in relation to contributions from other subbasins with stormwater sewer systems. A similar effect on the mass flux of lead was also noted. The mass flux of copper appeared to be less affected by the type of runoff event. This is a complex phenomenon that cannot be properly evaluated without an understanding of the outfall and sewer overflow sources.

Normalizing the fluxes by area, the contributions made by each of the Humber River subbasins showed that during dry weather, the Upper Black Creek subbasin contributed, on a unit area basis, the largest amounts of cadmium and lead. The Lower Humber subbasin contributed the largest amounts of copper and fecal coliforms. The Lower Black Creek subbasin contributed the second largest amounts of copper and fecal coliforms on a unit area basis.

During wet events, the two Black Creek subbasins were the largest contributors on a unit area basis of all five of the selected parameters considered (cadmium, copper, lead, fecal coliforms, and ammonia). This implies that during wet events the combined sewer overflow in the Lower Black Creek subbasin is not the only significant contributor of these parameters.

7. IMPLICATIONS AND RECOMMENDATIONS FOR THE TAWMS PROGRAM

Many of the conclusions drawn from these interim data are tentative. The number of events sampled, the limitation to a single season and the lack of sediment and biological data hinder the interpretation of parameter behavior. Much of the required information has however been gathered. These include sediment and biological tissue analyses and spring runoff data collected as part of this program but unavailable at the time of writing. These will be incorporated in the next phase of this project. This will also include documentation of the HSPF model development and its application on the Humber River.

In addition the MOE has undertaken three supplemental programs designed to address identified data gaps in the Humber River. These are:

1. Collection of additional bacteriological data to identify the origins of fecal coliforms and fecal streptococci in the Humber River.

2. Field survey to establish whether or not the observed high BOD and/or phosphorus levels have resulted in dissolved oxygen impairment.

3. Field program to define and evaluate sediment transport as a mechanism for contaminant movement in the Humber River.

All three of these studies will be reported separately by the MOE.

In addition the Pollution Control Committee is undertaking a series of projects to assess sources and contributions from stormwater outfalls and combined sewer overflows.

It is understood that these and other studies will be integrated to link observed problems with sources, prior to the development of pollution control measures.

To facilitate the definition of source/effect linkages, the HSPF hydraulic model should be refined using the expanded data base, and calibrated for key water quality parameters.

Receiving water quality has indicated that the Upper Black Creek drainage area may be receiving point sources of contaminants. Specific attention should be directed toward the identification of these sources.

Limited data collected for the Don River indicate severe water quality impairment. It is understood that the Don River will be the next watershed to be examined in detail in the TAWMS program. As the field sampling of wet events proved to be very difficult logistically, it is recommended that the possibility of using HSPF as a predictor for event/river behavior be examined and that using hypothetical storms, the model be used to assist in the development of an efficient sampling strategy for the Don River.

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LIST OF REFERENCES

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ANNEX 1
WATER QUALITY DATA

NOTES FOR ANNEX 1

1 - Many values are followed by remark codes.

Remark	Description
!LA	No data: sample spoiled in laboratory accident
!SM	No data: sample missing (lost in lab?)
!TX	No data: time limit expired
!UI	No data: undetermined interference
!CR	No data: could not perform confirming reanalysis
!QU	No data: quality controls unacceptable
!CS	No data: contamination suspected
!RI	See attached report (no numeric result) ITCS
<	Actual result is less than the reported value
<=>	Approximate result
<T	This low measurement is tentative, for info only
<W	"Zero", value reported is min. measurable amount
A>	Approx result: exceeded normal range limit
P54	PCB resembled Aroclor 1254
P60	PCB resembled Aroclor 1260
U72	Unreliable: sample age exceeds 72 hours
AIN	Approx result: interference suspected
UCS	Unreliable: contamination suspected
UIC	Unreliable: improper container
NOD	Missing results from MOE report
AIP	Analysis in progress

2. Coded names are used for organic compounds.

Compound Name	Coded Name	Number
Aldrin	ALDR	10
α-BHC Hexachlorocyclohexane	BHCA	11
β-BHC Hexachlorocyclohexane	BHCB	12
γ-BHC Hexachlorocyclohexane	BHCG	13
α-Chlordane	CHLA	14

Compound Name	Coded Name	Number
γ-Chlordane	CHLG	15
Dieldrin	DIEL	16
DMDT Methoxychlor	DMDT	17
Endosulfan I	END1	18
Endosulfan II	END2	19
Endrin	ENDR	20
Endosulfan Sulfate	EEDS	21
Heptachlorepoxide	HEPE	22
Heptachlor	HEPT	23
Mirex	MIRX	24
Oxychlordane	OCHL	25
OP-DDT	OPDT	26
PCB, Total	PCBT	27
PP-DDD	PPDD	28
PP-DDE	PPDE	29
PP-DDT	PPDT	30
2,4,5-Trichlorophenoxyacetic acid	245T	32
2,4-Dichlorophenoxyacetic acid	24D	32
2,4-Dichlorophenoxybutyric acid	24DB	33
2,4-D Propionic acid	24DP	34
Dicamba	DICA	35
Picloram	PICL	36
Silvex	SILV	37
Hexachlorobenzene	HCB	38
2,3,4-Trichlorophenol	234	39
2,3,4,5-Tetrachlorophenol	2345	40
2,3,5,6-Tetrachlorophenol	2356	41
2,4,5-Trichlorophenol	245	42
2,4,6-Trichlorophenol	246	43
Pentachlorophenol	PCPH	44

3. Several comments pertain to the determinations of minima, maxima, and means.

   - No datum with a remark code beginning with "!" was used in determining minima, maxima, and means.

- Approximate values, unreliable values, and values with remark codes beginning with "<" were used in determining minima, maxima and means.

- Minima, maxima, and means were not determined for dry events or for the organic parameters. There was only one value from each station during each dry event and there were few instances when an organic parameter was detected more than once at a single station during a wet event.

- All means are arithmetic means except for those for fecal coliforms and fecal streptococci. Means for these two parameters are geometric means.

- In many instances, not all samples collected during the wet events were analyzed. However, flow was determined each time a water sample was collected.

All these flow values were used to calculate the mean flow at a station during an event. Only flows at the time of collection of the samples ultimately analyzed are reported in these tables, so minimum, maximum and mean flows reported here might not apply to the data immediately above them. This is particularly evident for flows listed with the data on inorganic parameters.

TORONTO AREA WATERSHED MANAGEMENT STUDY
WATER QUALITY DATA
DRY EVENT 1 - OCTOBER 5,1982

Conventional Water Quality Parameters and Bacteria

STATION #1 Taylor Creek

#	Date and Time	FLOW m3/s	BOD5 mg/L O	NH4 mg/L N	pH	Phosphates Filt,react mg/L P	Phosphorus Unf,total mg/L P	Residue Filtra. mg/L	Residue Partic. mg/L	Fecal Coliform #/100mL	Fecal Strep #/100mL
1	05/10/82 10:10	0.14	1.40	0.058	8.39	0.0180	0.045	882.	5.56	4100	380

STATION #2 Don River @ Front St.

#	Date and Time	FLOW m3/s	BOD5 mg/L O	NH4 mg/L N	pH	Phosphates Filt,react mg/L P	Phosphorus Unf,total mg/L P	Residue Filtra. mg/L	Residue Partic. mg/L	Fecal Coliform #/100mL	Fecal Strep #/100mL
1	05/10/82 11:10	1.52	12.50	2.000	7.63	0.0490	0.168	698.	12.60	69000	3200

STATION #3 Humber River @ Bloor St.

#	Date and Time	FLOW m3/s	BOD5 mg/L O	NH4 mg/L N	pH	Phosphates Filt,react mg/L P	Phosphorus Unf,total mg/L P	Residue Filtra. mg/L	Residue Partic. mg/L	Fecal Coliform #/100mL	Fecal Strep #/100mL
1	05/10/82 11:30	2.57	0.99	0.048	8.44	0.0060	0.014	442.	2.43	520	100<=>

STATION #4 Mimico Creek @ QEW Offramp

#	Date and Time	FLOW m3/s	BOD5 mg/L O	NH4 mg/L N	pH	Phosphates Filt,react mg/L P	Phosphorus Unf,total mg/L P	Residue Filtra. mg/L	Residue Partic. mg/L	Fecal Coliform #/100mL	Fecal Strep #/100mL
1	05/10/82 11:30	0.38	0.96	0.040	8.25	0.0040	0.028	748.	35.30	740	580

STATION #5 Black Creek @ Scarlett Rd.

#	Date and Time	FLOW m3/s	BOD5 mg/L O	NH4 mg/L N	pH	Phosphates Filt,react mg/L P	Phosphorus Unf,total mg/L P	Residue Filtra. mg/L	Residue Partic. mg/L	Fecal Coliform #/100mL	Fecal Strep #/100mL
1	05/10/82 13:30	0.30	2.00	0.004<T	8.32	0.3200	0.450	1075.	9.62	1360	220

STATION #6 Humber River @ Scarlett Rd.

#	Date and Time	FLOW m3/s	BOD5 mg/L O	NH4 mg/L N	pH	Phosphates Filt,react mg/L P	Phosphorus Unf,total mg/L P	Residue Filtra. mg/L	Residue Partic. mg/L	Fecal Coliform #/100mL	Fecal Strep #/100mL
1	05/10/82 12:15	2.36	1.27	0.018	8.51	0.0080	0.022	378.	7.69	300	340

STATION #7 Humber River @ Lawrence Ave.

#	Date and Time	FLOW m3/s	BOD5 mg/L O	NH4 mg/L N	pH	Phosphates Filt,react mg/L P	Phosphorus Unf,total mg/L P	Residue Filtra. mg/L	Residue Partic. mg/L	Fecal Coliform #/100mL	Fecal Strep #/100mL
1	05/10/82 11:00	2.70	1.21	0.012	8.57	0.0070	0.021	368.	5.70	120<=>	100<=

STATION #8 West Humber @ Main Humber

#	Date and Time	FLOW m3/s	BOD5 mg/L O	NH4 mg/L N	pH	Phosphates Filt,react mg/L P	Phosphorus Unf,total mg/L P	Residue Filtra. mg/L	Residue Partic. mg/L	Fecal Coliform #/100mL	Fecal Strep #/100mL
1	05/10/82 10:00	0.33	1.01	0.018	8.46	0.0040	0.018	455.	3.68	140	50<=>

STATION #9 Main Humber @ West Humber

#	Date and Time	FLOW m3/s	BOD5 mg/L O	NH4 mg/L N	pH	Phosphates Filt,react mg/L P	Phosphorus Unf,total mg/L P	Residue Filtra. mg/L	Residue Partic. mg/L	Fecal Coliform #/100mL	Fecal Strep #/100mL
1	05/10/82 10:00	1.68	0.89	0.006	8.33	0.0070	0.027	377.	8.36	110	120

STATION #10 Humber River @ Steeles Ave.

#	Date and Time	FLOW m3/s	BOD5 mg/L O	NH4 mg/L N	pH	Phosphates Filt,react mg/L P	Phosphorus Unf,total mg/L P	Residue Filtra. mg/L	Residue Partic. mg/L	Fecal Coliform #/100mL	Fecal Strep #/100mL
1	05/10/82 09:00	2.10	0.94	0.004<T	8.33	0.0080	0.021	373.	12.10	60<=>	40<=>

STATION #11 Black Creek @ Lawrence Ave.

#	Date and Time	FLOW m3/s	BOD5 mg/L O	NH4 mg/L N	pH	Phosphates Filt,react mg/L P	Phosphorus Unf,total mg/L P	Residue Filtra. mg/L	Residue Partic. mg/L	Fecal Coliform #/100mL	Fecal Strep #/100mL
1	05/10/82 11:45	0.13	1.37	0.086	8.38	0.1780	0.225	944.	2.62	1460	180<=>

TORONTO AREA WATERSHED MANAGEMENT STUDY
WATER QUALITY DATA
DRY EVENT 1 - OCTOBER 5,1982

Inorganic Parameters (Metals)

STATION #1 Taylor Creek

#	Date and Time	FLOW m3/s	Cadmium mg/L Cd	Chromium mg/L Cr	Copper mg/L Cu	Mercury ug/L Hg	Nickel mg/L Ni	Lead mg/L Pb	Zinc mg/L Zn
1	05/10/82 10:10	0.14	0.0002<	0.005	0.015	0.050<T	0.003	0.003<	0.014

STATION #2 Don River @ Front St.

#	Date and Time	FLOW m3/s	Cadmium mg/L Cd	Chromium mg/L Cr	Copper mg/L Cu	Mercury ug/L Hg	Nickel mg/L Ni	Lead mg/L Pb	Zinc mg/L Zn
1	05/10/82 11:10	1.52	0.0002<	0.013	0.012	0.050<T	0.011	0.051	0.070

STATION #3 Humber River @ Bloor St.

#	Date and Time	FLOW m3/s	Cadmium mg/L Cd	Chromium mg/L Cr	Copper mg/L Cu	Mercury ug/L Hg	Nickel mg/L Ni	Lead mg/L Pb	Zinc mg/L Zn
1	05/10/82 11:30	2.57	0.0002<	0.005	0.007	0.050<T	0.001	0.003<	0.005

STATION #4 Mimico Creek @ QEW Offramp

#	Date and Time	FLOW m3/s	Cadmium mg/L Cd	Chromium mg/L Cr	Copper mg/L Cu	Mercury ug/L Hg	Nickel mg/L Ni	Lead mg/L Pb	Zinc mg/L Zn
1	05/10/82 11:30	0.38	0.0002<	0.008	0.017	0.050<T	0.003	0.004	0.023

STATION #5 Black Creek @ Scarlett Rd.

#	Date and Time	FLOW m3/s	Cadmium mg/L Cd	Chromium mg/L Cr	Copper mg/L Cu	Mercury ug/L Hg	Nickel mg/L Ni	Lead mg/L Pb	Zinc mg/L Zn
1	05/10/82 13:30	0.30	0.0002<	0.021	0.020	0.050<T	0.004	0.007	0.040

STATION #6 Humber River @ Scarlett Rd.

#	Date and Time	FLOW m3/s	Cadmium mg/L Cd	Chromium mg/L Cr	Copper mg/L Cu	Mercury ug/L Hg	Nickel mg/L Ni	Lead mg/L Pb	Zinc mg/L Zn
1	05/10/82 12:15	2.36	0.0002<	0.004	0.005	0.050<T	0.004	0.003<	0.006

STATION #7 Humber River @ Lawrence Ave.

#	Date and Time	FLOW m3/s	Cadmium mg/L Cd	Chromium mg/L Cr	Copper mg/L Cu	Mercury ug/L Hg	Nickel mg/L Ni	Lead mg/L Pb	Zinc mg/L Zn
1	05/10/82 11:00	2.70	0.0002<	0.002	0.006	0.050<T	0.004	0.003<	0.003

STATION #8 West Humber @ Main Humber

#	Date and Time	FLOW m3/s	Cadmium mg/L Cd	Chromium mg/L Cr	Copper mg/L Cu	Mercury ug/L Hg	Nickel mg/L Ni	Lead mg/L Pb	Zinc mg/L Zn
1	05/10/82 10:00	0.33	0.0002<	0.002	0.005	0.050<T	0.001<	0.003<	0.001

STATION #9 Main Humber @ West Humber

#	Date and Time	FLOW m3/s	Cadmium mg/L Cd	Chromium mg/L Cr	Copper mg/L Cu	Mercury ug/L Hg	Nickel mg/L Ni	Lead mg/L Pb	Zinc mg/L Zn
1	05/10/82 10:00	1.68	0.0002<	0.001	0.005	0.050<T	0.002	0.003<	0.003

STATION #10 Humber River @ Steeles Ave.

#	Date and Time	FLOW m3/s	Cadmium mg/L Cd	Chromium mg/L Cr	Copper mg/L Cu	Mercury ug/L Hg	Nickel mg/L Ni	Lead mg/L Pb	Zinc mg/L Zn
1	05/10/82 09:00	2.10	0.0002<	0.001	0.008	0.050<T	0.001<	0.003<	0.017

STATION #11 Black Creek @ Lawrence Ave.

#	Date and Time	FLOW m3/s	Cadmium mg/L Cd	Chromium mg/L Cr	Copper mg/L Cu	Mercury ug/L Hg	Nickel mg/L Ni	Lead mg/L Pb	Zinc mg/L Zn
1	05/10/82 11:45	0.13	0.0020<	0.003	0.011	0.050<T	0.002	0.008	0.014

TORONTO AREA WATERSHED MANAGEMENT STUDY
WATER QUALITY DATA
DRY EVENT 1 - OCTOBER 5,1982

Pesticides and Organic Parameters

STATION #1 Taylor Creek

# Date and Time	FLOW m3/s	10 ALDR ng/L	11 BHCA ng/L	12 BHCB ng/L	13 BHCG ng/L	14 CHLA ng/L	15 CHLG ng/L	16 DIEL ng/L	17 DMDT ng/L	18 END1 ng/L	19 END2 ng/L	20 ENDR ng/L	21 ENDS ng/L
1 05/10/82 10:10	0.14	1<W	1<W	1<W	1<W	2<W	2<W	2<W	5<W	2<W	4<W	4<W	4<W

STATION #2 Don River @ Front St.

# Date and Time	FLOW m3/s	10 ALDR ng/L	11 BHCA ng/L	12 BHCB ng/L	13 BHCG ng/L	14 CHLA ng/L	15 CHLG ng/L	16 DIEL ng/L	17 DMDT ng/L	18 END1 ng/L	19 END2 ng/L	20 ENDR ng/L	21 ENDS ng/L
1 05/10/82 11:10	1.52	1<W	1<W	1<W	1<W	2<W	2<W	2<W	5<W	2<W	4<W	4<W	4<W

STATION #3 Humber River @ Bloor St.

# Date and Time	FLOW m3/s	10 ALDR ng/L	11 BHCA ng/L	12 BHCB ng/L	13 BHCG ng/L	14 CHLA ng/L	15 CHLG ng/L	16 DIEL ng/L	17 DMDT ng/L	18 END1 ng/L	19 END2 ng/L	20 ENDR ng/L	21 ENDS ng/L
1 05/10/82 11:30	2.57	1<W	1<W	1<W	1<W	2<W	2<W	2<W	5<W	2<W	4<W	4<W	4<W

STATION #4 Mimico Creek @ QEW Offramp

# Date and Time	FLOW m3/s	10 ALDR ng/L	11 BHCA ng/L	12 BHCB ng/L	13 BHCG ng/L	14 CHLA ng/L	15 CHLG ng/L	16 DIEL ng/L	17 DMDT ng/L	18 END1 ng/L	19 END2 ng/L	20 ENDR ng/L	21 ENDS ng/L
1 05/10/82 11:30	0.38	1<W	1<W	1<W	1<W	2<W	2<W	2<W	5<W	2<W	4<W	4<W	4<W

STATION #5 Black Creek @ Scarlett Rd.

# Date and Time	FLOW m3/s	10 ALDR ng/L	11 BHCA ng/L	12 BHCB ng/L	13 BHCG ng/L	14 CHLA ng/L	15 CHLG ng/L	16 DIEL ng/L	17 DMDT ng/L	18 END1 ng/L	19 END2 ng/L	20 ENDR ng/L	21 ENDS ng/L
1 05/10/82 13:30	0.30	1<W	1<W	1<W	1<W	2<W	2<W	2<W	5<W	2<W	4<W	4<W	4<W

STATION #6 Humber River @ Scarlett Rd.

#	Date and Time	FLOW m3/s	10 ALDR ng/L	11 BHCA ng/L	12 BHCB ng/L	13 BHCG ng/L	14 CHLA ng/L	15 CHLG ng/L	16 DIEL ng/L	17 DMDT ng/L	18 END1 ng/L	19 END2 ng/L	20 ENDR ng/L	21 ENDS ng/L
1	05/10/82 12:15	2.36	1<W	1<W	1<W	1<W	2<W	2<W	2<W	5<W	2<W	4<W	4<W	4<W

STATION #7 Humber River @ Lawrence Ave.

#	Date and Time	FLOW m3/s	10 ALDR ng/L	11 BHCA ng/L	12 BHCB ng/L	13 BHCG ng/L	14 CHLA ng/L	15 CHLG ng/L	16 DIEL ng/L	17 DMDT ng/L	18 END1 ng/L	19 END2 ng/L	20 ENDR ng/L	21 ENDS ng/L
1	05/10/82 11:00	2.70	1<W	1<W	1<W	1<W	2<W	2<W	2<W	5<W	2<W	4<W	4<W	4<W

STATION #8 West Humber @ Main Humber

#	Date and Time	FLOW m3/s	10 ALDR ng/L	11 BHCA ng/L	12 BHCB ng/L	13 BHCG ng/L	14 CHLA ng/L	15 CHLG ng/L	16 DIEL ng/L	17 DMDT ng/L	18 END1 ng/L	19 END2 ng/L	20 ENDR ng/L	21 ENDS ng/L
1	05/10/82 10:00	0.33	1<W	1<W	1<W	1<W	2<W	2<W	2<W	5<W	2<W	4<W	4<W	4<W

STATION #9 Main Humber @ West Humber

#	Date and Time	FLOW m3/s	10 ALDR ng/L	11 BHCA ng/L	12 BHCB ng/L	13 BHCG ng/L	14 CHLA ng/L	15 CHLG ng/L	16 DIEL ng/L	17 DMDT ng/L	18 END1 ng/L	19 END2 ng/L	20 ENDR ng/L	21 ENDS ng/L
1	05/10/82 10:00	1.68	1<W	1<W	1<W	1<W	2<W	2<W	2<W	5<W	2<W	4<W	4<W	4<W

STATION #10 Humber River @ Steeles Ave.

#	Date and Time	FLOW m3/s	10 ALDR ng/L	11 BHCA ng/L	12 BHCB ng/L	13 BHCG ng/L	14 CHLA ng/L	15 CHLG ng/L	16 DIEL ng/L	17 DMDT ng/L	18 END1 ng/L	19 END2 ng/L	20 ENDR ng/L	21 ENDS ng/L
1	05/10/82 09:00	2.10	1<W	1<W	1<W	1<W	2<W	2<W	2<W	5<W	2<W	4<W	4<W	4<W

STATION #11 Black Creek @ Lawrence Ave.

#	Date and Time	FLOW m3/s	10 ALDR ng/L	11 BHCA ng/L	12 BHCB ng/L	13 BHCG ng/L	14 CHLA ng/L	15 CHLG ng/L	16 DIEL ng/L	17 DMDT ng/L	18 END1 ng/L	19 END2 ng/L	20 ENDR ng/L	21 ENDS ng/L
1	05/10/82 11:45	0.13	1<W	2	1<W	1	2<W	2<W	2<W	5<W	2<W	4<W	4<W	4<W

TORONTO AREA WATERSHED MANAGEMENT STUDY
WATER QUALITY DATA
DRY EVENT 1 - OCTOBER 5,1982

Pesticides and Organic Parameters

STATION #1 Taylor Creek

# Date and Time	FLOW m3/s	22 HEPE ng/L	23 HEPT ng/L	24 MIRX ng/L	25 OCHL ng/L	26 OPDT ng/L	27 PCBT ng/L	28 PPDD ng/L	29 PPDE ng/L	30 PPDT ng/L	31 245T ng/L	32 24D ng/L	33 24DB ng/L
1 05/10/82 10:10	0.14	1<W	1<W	5<W	2<W	5<W	20<W	5<W	1<W	5<W	50<W	100<W	200<W

STATION #2 Don River @ Front St.

# Date and Time	FLOW m3/s	22 HEPE ng/L	23 HEPT ng/L	24 MIRX ng/L	25 OCHL ng/L	26 OPDT ng/L	27 PCBT ng/L	28 PPDD ng/L	29 PPDE ng/L	30 PPDT ng/L	31 245T ng/L	32 24D ng/L	33 24DB ng/L
1 05/10/82 11:10	1.52	1<W	1<W	5<W	2<W	5<W	20<W	5<W	1<W	5<W	50<W	470	200<W

STATION #3 Humber River @ Bloor St.

# Date and Time	FLOW m3/s	22 HEPE ng/L	23 HEPT ng/L	24 MIRX ng/L	25 OCHL ng/L	26 OPDT ng/L	27 PCBT ng/L	28 PPDD ng/L	29 PPDE ng/L	30 PPDT ng/L	31 245T ng/L	32 24D ng/L	33 24DB ng/L
1 05/10/82 11:30	2.57	1<W	1<W	5<W	2<W	5<W	20<W	5<W	1<W	5<W	50<W	100<W	200<W

STATION #4 Mimico Creek @ QEW Offramp

# Date and Time	FLOW m3/s	22 HEPE ng/L	23 HEPT ng/L	24 MIRX ng/L	25 OCHL ng/L	26 OPDT ng/L	27 PCBT ng/L	28 PPDD ng/L	29 PPDE ng/L	30 PPDT ng/L	31 245T ng/L	32 24D ng/L	33 24DB ng/L
1 05/10/82 11:30	0.38	1<W	1<W	5<W	2<W	5<W	20<W	5<W	1<W	5<W	50<W	100<W	200<W

STATION #5 Black Creek @ Scarlett Rd.

# Date and Time	FLOW m3/s	22 HEPE ng/L	23 HEPT ng/L	24 MIRX ng/L	25 OCHL ng/L	26 OPDT ng/L	27 PCBT ng/L	28 PPDD ng/L	29 PPDE ng/L	30 PPDT ng/L	31 245T ng/L	32 24D ng/L	33 24DB ng/L
1 05/10/82 13:30	0.30	1<W	1<W	5<W	2<W	5<W	20<W	5<W	1<W	5<W	50<W	100<W	200<W

STATION #6 Humber River @ Scarlett Rd.

# Date and Time	FLOW m3/s	22 HEPE ng/L	23 HEPT ng/L	24 MIRX ng/L	25 OCHL ng/L	26 OPDT ng/L	27 PCBT ng/L	28 PPDD ng/L	29 PPDE ng/L	30 PPDT ng/L	31 245T ng/L	32 24D ng/L	33 24DB ng/L
1 05/10/82 12:15	2.36	1<W	1<W	5<W	2<W	5<W	20<W	5<W	1<W	5<W	50<W	100<W	200<W

STATION #7 Humber River @ Lawrence Ave.

# Date and Time	FLOW m3/s	22 HEPE ng/L	23 HEPT ng/L	24 MIRX ng/L	25 OCHL ng/L	26 OPDT ng/L	27 PCBT ng/L	28 PPDD ng/L	29 PPDE ng/L	30 PPDT ng/L	31 245T ng/L	32 24D ng/L	33 24DB ng/L
1 05/10/82 11:00	2.70	1<W	1<W	5<W	2<W	5<W	20<W	5<W	1<W	5<W	50<W	100<W	200<W

STATION #8 West Humber @ Main Humber

# Date and Time	FLOW m3/s	22 HEPE ng/L	23 HEPT ng/L	24 MIRX ng/L	25 OCHL ng/L	26 OPDT ng/L	27 PCBT ng/L	28 PPDD ng/L	29 PPDE ng/L	30 PPDT ng/L	31 245T ng/L	32 24D ng/L	33 24DB ng/L
1 05/10/82 10:00	0.33	1<W	1<W	5<W	2<W	5<W	20<W	5<W	1<W	5<W	50<W	100<W	200<W

STATION #9 Main Humber @ West Humber

# Date and Time	FLOW m3/s	22 HEPE ng/L	23 HEPT ng/L	24 MIRX ng/L	25 OCHL ng/L	26 OPDT ng/L	27 PCBT ng/L	28 PPDD ng/L	29 PPDE ng/L	30 PPDT ng/L	31 245T ng/L	32 24D ng/L	33 24DB ng/L
1 05/10/82 10:00	1.68	1<W	1<W	5<W	2<W	5<W	20<W	5<W	1<W	5<W	50<W	100<W	200<W

STATION #10 Humber River @ Steeles Ave.

# Date and Time	FLOW m3/s	22 HEPE ng/L	23 HEPT ng/L	24 MIRX ng/L	25 OCHL ng/L	26 OPDT ng/L	27 PCBT ng/L	28 PPDD ng/L	29 PPDE ng/L	30 PPDT ng/L	31 245T ng/L	32 24D ng/L	33 24DB ng/L
1 05/10/82 09:00	2.10	1<W	1<W	5<W	2<W	5<W	20<W	5<W	1<W	5<W	50<W	100<W	200<W

STATION #11 Black Creek @ Lawrence Ave.

# Date and Time	FLOW m3/s	22 HEPE ng/L	23 HEPT ng/L	24 MIRX ng/L	25 OCHL ng/L	26 OPDT ng/L	27 PCBT ng/L	28 PPDD ng/L	29 PPDE ng/L	30 PPDT ng/L	31 245T ng/L	32 24D ng/L	33 24DB ng/L
1 05/10/82 11:45	0.13	1<W	1<W	5<W	2<W	5<W	20<W	5<W	1<W	5<W	50<W	100<W	200<W

TORONTO AREA WATERSHED MANAGEMENT STUDY
WATER QUALITY DATA
DRY EVENT 1 - OCTOBER 5,1982

Pesticides and Organic Parameters

STATION #1 Taylor Creek

# Date and Time	FLOW m3/s	34 24DP ng/L	35 DICA ng/L	36 PICL ng/L	37 SILV ng/L	38 HCB ng/L	39 234 ng/L	40 2345 ng/L	41 2356 ng/L	42 245 ng/L	43 246 ng/L	44 PCPH ng/L
1 05/10/82 10:10	0.14	100<W	100<W	100<W	50<W	1	100<W	50<W	50<W	50<W	50<W	50<W

STATION #2 Don River @ Front St.

# Date and Time	FLOW m3/s	34 24DP ng/L	35 DICA ng/L	36 PICL ng/L	37 SILV ng/L	38 HCB ng/L	39 234 ng/L	40 2345 ng/L	41 2356 ng/L	42 245 ng/L	43 246 ng/L	44 PCPH ng/L
1 05/10/82 11:10	1.52	100<W	100<W	100<W	50<W	1<W	100<W	50<W	50<W	50<W	50<W	100

STATION #3 Humber River @ Bloor St.

# Date and Time	FLOW m3/s	34 24DP ng/L	35 DICA ng/L	36 PICL ng/L	37 SILV ng/L	38 HCB ng/L	39 234 ng/L	40 2345 ng/L	41 2356 ng/L	42 245 ng/L	43 246 ng/L	44 PCPH ng/L
1 05/10/82 11:30	2.57	100<W	100<W	100<W	50<W	1<W	100<W	50<W	50<W	50<W	50<W	50<W

STATION #4 Mimico Creek @ QEW Offramp

# Date and Time	FLOW m3/s	34 24DP ng/L	35 DICA ng/L	36 PICL ng/L	37 SILV ng/L	38 HCB ng/L	39 234 ng/L	40 2345 ng/L	41 2356 ng/L	42 245 ng/L	43 246 ng/L	44 PCPH ng/L
1 05/10/82 11:30	0.38	100<W	200	100<W	50<W	1	100<W	50<W	50<W	50<W	50<W	400

STATION #5 Black Creek @ Scarlett Rd.

# Date and Time	FLOW m3/s	34 24DP ng/L	35 DICA ng/L	36 PICL ng/L	37 SILV ng/L	38 HCB ng/L	39 234 ng/L	40 2345 ng/L	41 2356 ng/L	42 245 ng/L	43 246 ng/L	44 PCPH ng/L
1 05/10/82 13:30	0.30	100<W	100<W	100<W	50<W	1<W	100<W	50<W	50<W	50<W	50<W	50<W

STATION #6 Humber River @ Scarlett Rd.

#	Date and Time	FLOW m3/s	34 24DP ng/L	35 DICA ng/L	36 PICL ng/L	37 SILV ng/L	38 HCB ng/L	39 234 ng/L	40 2345 ng/L	41 2356 ng/L	42 245 ng/L	43 246 ng/L	44 PCPH ng/L
1	05/10/82 12:15	2.36	100<W	100<W	100<W	50<W	1<W	100<W	50<W	50<W	50<W	50<W	50<W

STATION #7 Humber River @ Lawrence Ave.

#	Date and Time	FLOW m3/s	34 24DP ng/L	35 DICA ng/L	36 PICL ng/L	37 SILV ng/L	38 HCB ng/L	39 234 ng/L	40 2345 ng/L	41 2356 ng/L	42 245 ng/L	43 246 ng/L	44 PCPH ng/L
1	05/10/82 11:00	2.70	100<W	100<W	100<W	50<W	1<W	100<W	50<W	50<W	50<W	50<W	50<W

STATION #8 West Humber @ Main Humber

#	Date and Time	FLOW m3/s	34 24DP ng/L	35 DICA ng/L	36 PICL ng/L	37 SILV ng/L	38 HCB ng/L	39 234 ng/L	40 2345 ng/L	41 2356 ng/L	42 245 ng/L	43 246 ng/L	44 PCPH ng/L
1	05/10/82 10:00	0.33	100<W	100<W	100<W	50<W	1<W	100<W	50<W	50<W	50<W	50<W	50<W

STATION #9 Main Humber @ West Humber

#	Date and Time	FLOW m3/s	34 24DP ng/L	35 DICA ng/L	36 PICL ng/L	37 SILV ng/L	38 HCB ng/L	39 234 ng/L	40 2345 ng/L	41 2356 ng/L	42 245 ng/L	43 246 ng/L	44 PCPH ng/L
1	05/10/82 10:00	1.68	100<W	100<W	100<W	50<W	1	100<W	50<W	50<W	50<W	50<W	50<W

STATION #10 Humber River @ Steeles Ave.

#	Date and Time	FLOW m3/s	34 24DP ng/L	35 DICA ng/L	36 PICL ng/L	37 SILV ng/L	38 HCB ng/L	39 234 ng/L	40 2345 ng/L	41 2356 ng/L	42 245 ng/L	43 246 ng/L	44 PCPH ng/L
1	05/10/82 09:00	2.10	100<W	100<W	100<W	50<W	1<W	100<W	50<W	50<W	50<W	50<W	50<W

STATION #11 Black Creek @ Lawrence Ave.

#	Date and Time	FLOW m3/s	34 24DP ng/L	35 DICA ng/L	36 PICL ng/L	37 SILV ng/L	38 HCB ng/L	39 234 ng/L	40 2345 ng/L	41 2356 ng/L	42 245 ng/L	43 246 ng/L	44 PCPH ng/L
1	05/10/82 11:45	0.13	100<W	100<W	100<W	50<W	1<W	100<W	50<W	50<W	50<W	50<W	50<W

Conventional Water Quality Parameters and Bacteria

STATION #1 Taylor Creek

#	Date and Time	FLOW m3/s	BOD5 mg/L O	NH4 mg/L N	pH	Phosphates Filt,react mg/L P	Phosphorus Unf,total mg/L P	Residue Filtra. mg/L	Residue Partic. mg/L	Fecal Coliform #/100mL	Fecal Strep #/100mL
1	26/10/82 13:50	0.15	0.54	0.044	8.14	0.0140	0.032	850.	4.38	1060	120<=>

STATION #2 Don River @ Front St.

#	Date and Time	FLOW m3/s	BOD5 mg/L O	NH4 mg/L N	pH	Phosphates Filt,react mg/L P	Phosphorus Unf,total mg/L P	Residue Filtra. mg/L	Residue Partic. mg/L	Fecal Coliform #/100mL	Fecal Strep #/100mL
1	26/10/82 14:15	1.78	4.67	0.790	7.46	0.0740	0.322	693.	12.00	6700	320

STATION #3 Humber River @ Bloor St.

#	Date and Time	FLOW m3/s	BOD5 mg/L O	NH4 mg/L N	pH	Phosphates Filt,react mg/L P	Phosphorus Unf,total mg/L P	Residue Filtra. mg/L	Residue Partic. mg/L	Fecal Coliform #/100mL	Fecal Strep #/100mL
1	26/10/82 15:25	3.79	0.96	0.040	8.47	0.0025<T	0.025	417.	8.00	140<=>	80<=>

STATION #4 Mimico Creek @ QEW Offramp

#	Date and Time	FLOW m3/s	BOD5 mg/L O	NH4 mg/L N	pH	Phosphates Filt,react mg/L P	Phosphorus Unf,total mg/L P	Residue Filtra. mg/L	Residue Partic. mg/L	Fecal Coliform #/100mL	Fecal Strep #/100mL
1	26/10/82 14:50	0.41	0.91	0.090	8.29	0.0050	0.016	700.	18.20	220	140<=>

STATION #5 Black Creek @ Scarlett Rd.

#	Date and Time	FLOW m3/s	BOD5 mg/L O	NH4 mg/L N	pH	Phosphates Filt,react mg/L P	Phosphorus Unf,total mg/L P	Residue Filtra. mg/L	Residue Partic. mg/L	Fecal Coliform #/100mL	Fecal Strep #/100mL
1	26/10/82 11:45	0.25	1.50	0.008	8.36	0.0550	0.090	981.	9.55	4300	240

STATION #6 Humber River @ Scarlett Rd.

#	Date and Time	FLOW m3/s	BOD5 mg/L O	NH4 mg/L N	pH	Phosphates Filt,react mg/L P	Phosphorus Unf,total mg/L P	Residue Filtra. mg/L	Residue Partic. mg/L	Fecal Coliform #/100mL	Fecal Strep #/100mL
1	26/10/82 11:30	2.59	0.78	0.052	8.44	0.0030	0.020	369.	17.50	30<=	30<=

STATION #7 Humber River @ Lawrence Ave.

#	Date and Time	FLOW m3/s	BOD5 mg/L O	NH4 mg/L N	pH	Phosphates Filt,react mg/L P	Phosphorus Unf,total mg/L P	Residue Filtra. mg/L	Residue Partic. mg/L	Fecal Coliform #/100mL	Fecal Strep #/100mL
1	26/10/82 10:45	2.76	1.02	0.048	8.47	0.0035	0.021	347.	13.90	20<=	30<=>

STATION #8 West Humber @ Main Humber

#	Date and Time	FLOW m3/s	BOD5 mg/L O	NH4 mg/L N	pH	Phosphates Filt,react mg/L P	Phosphorus Unf,total mg/L P	Residue Filtra. mg/L	Residue Partic. mg/L	Fecal Coliform #/100mL	Fecal Strep #/100mL
1	26/10/82 09:50	0.41	0.36<T	0.028	8.50	0.0030	0.018	487.	1.36	80<=	40<=>

STATION #9 Main Humber @ West Humber

#	Date and Time	FLOW m3/s	BOD5 mg/L O	NH4 mg/L N	pH	Phosphates Filt,react mg/L P	Phosphorus Unf,total mg/L P	Residue Filtra. mg/L	Residue Partic. mg/L	Fecal Coliform #/100mL	Fecal Strep #/100mL
1	26/10/82 09:50	1.67	0.75	0.036	8.48	0.0045	0.019	385.	3.08	60<=>	40<=>

STATION #10 Humber River @ Steeles Ave.

#	Date and Time	FLOW m3/s	BOD5 mg/L O	NH4 mg/L N	pH	Phosphates Filt,react mg/L P	Phosphorus Unf,total mg/L P	Residue Filtra. mg/L	Residue Partic. mg/L	Fecal Coliform #/100mL	Fecal Strep #/100mL
1	26/10/82 09:55	2.30	0.79	0.018	8.46	0.0035	0.018	347.	20.30	50<=	30<=>

STATION #11 Black Creek @ Lawrence Ave.

#	Date and Time	FLOW m3/s	BOD5 mg/L O	NH4 mg/L N	pH	Phosphates Filt,react mg/L P	Phosphorus Unf,total mg/L P	Residue Filtra. mg/L	Residue Partic. mg/L	Fecal Coliform #/100mL	Fecal Strep #/100mL
1	26/10/82 11:10	0.10	1.49	0.044	8.13	0.0170	0.113	880.	23.00	420	340

TORONTO AREA WATERSHED MANAGEMENT STUDY
WATER QUALITY DATA
DRY EVENT 2 - OCTOBER 26, 1982

Inorganic Parameters (Metals)

STATION #1 Taylor Creek

#	Date and Time	FLOW m3/s	Cadmium mg/L Cd	Chromium mg/L Cr	Copper mg/L Cu	Mercury ug/L Hg	Nickel mg/L Ni	Lead mg/L Pb	Zinc mg/L Zn
1	26/10/82 13:50	0.15	0.0006	0.004	0.013	0.000!CR	0.003	0.005	0.013

STATION #2 Don River @ Front St.

#	Date and Time	FLOW m3/s	Cadmium mg/L Cd	Chromium mg/L Cr	Copper mg/L Cu	Mercury ug/L Hg	Nickel mg/L Ni	Lead mg/L Pb	Zinc mg/L Zn
1	26/10/82 14:15	1.78	0.0004	0.008	0.014	0.030<	0.012	0.013	0.035

STATION #3 Humber River @ Bloor St.

#	Date and Time	FLOW m3/s	Cadmium mg/L Cd	Chromium mg/L Cr	Copper mg/L Cu	Mercury ug/L Hg	Nickel mg/L Ni	Lead mg/L Pb	Zinc mg/L Zn
1	26/10/82 15:25	3.79	0.0002<	0.004	0.008	0.030<	0.004	0.003<	0.007

STATION #4 Mimico Creek @ QEW Offramp

#	Date and Time	FLOW m3/s	Cadmium mg/L Cd	Chromium mg/L Cr	Copper mg/L Cu	Mercury ug/L Hg	Nickel mg/L Ni	Lead mg/L Pb	Zinc mg/L Zn
1	26/10/82 14:50	0.41	0.0003	0.005	0.012	0.030<	0.002	0.008	0.032

STATION #5 Black Creek @ Scarlett Rd.

#	Date and Time	FLOW m3/s	Cadmium mg/L Cd	Chromium mg/L Cr	Copper mg/L Cu	Mercury ug/L Hg	Nickel mg/L Ni	Lead mg/L Pb	Zinc mg/L Zn
1	26/10/82 11:45	0.25	0.0005	0.039	0.017	0.030	0.015	0.005	0.049

STATION #6 Humber River @ Scarlett Rd.

#	Date and Time	FLOW m3/s	Cadmium mg/L Cd	Chromium mg/L Cr	Copper mg/L Cu	Mercury ug/L Hg	Nickel mg/L Ni	Lead mg/L Pb	Zinc mg/L Zn
1	26/10/82 11:30	2.59	0.0003	0.005	0.007	0.030<	0.005	0.008	0.042

STATION #7 Humber River @ Lawrence Ave.

#	Date and Time	FLOW m3/s	Cadmium mg/L Cd	Chromium mg/L Cr	Copper mg/L Cu	Mercury ug/L Hg	Nickel mg/L Ni	Lead mg/L Pb	Zinc mg/L Zn
1	26/10/82 10:45	2.76	0.0003	0.002	0.006	0.030<	0.005	0.004	0.004

STATION #8 West Humber @ Main Humber

#	Date and Time	FLOW m3/s	Cadmium mg/L Cd	Chromium mg/L Cr	Copper mg/L Cu	Mercury ug/L Hg	Nickel mg/L Ni	Lead mg/L Pb	Zinc mg/L Zn
1	26/10/82 09:50	0.41	0.0004	0.003	0.011	0.030<	0.001	0.005	0.002

STATION #9 Main Humber @ West Humber

#	Date and Time	FLOW m3/s	Cadmium mg/L Cd	Chromium mg/L Cr	Copper mg/L Cu	Mercury ug/L Hg	Nickel mg/L Ni	Lead mg/L Pb	Zinc mg/L Zn
1	26/10/82 09:50	1.67	0.0003	0.002	0.007	0.030<	0.002	0.003<	0.003

STATION #10 Humber River @ Steeles Ave.

#	Date and Time	FLOW m3/s	Cadmium mg/L Cd	Chromium mg/L Cr	Copper mg/L Cu	Mercury ug/L Hg	Nickel mg/L Ni	Lead mg/L Pb	Zinc mg/L Zn
1	26/10/82 09:55	2.30	0.0004	0.002	0.008	0.030<	0.001<	0.004	0.014

STATION #11 Black Creek @ Lawrence Ave.

#	Date and Time	FLOW m3/s	Cadmium mg/L Cd	Chromium mg/L Cr	Copper mg/L Cu	Mercury ug/L Hg	Nickel mg/L Ni	Lead mg/L Pb	Zinc mg/L Zn
1	26/10/82 11:10	0.10	0.0005	0.007	0.016	0.030<	0.003	0.014	0.030

TORONTO AREA WATERSHED MANAGEMENT STUDY
WATER QUALITY DATA
DRY EVENT 2 - OCTOBER 26, 1982

Pesticides and Organic Parameters

STATION #1 Taylor Creek

# Date and Time	FLOW m3/s	10 ALDR ng/L	11 BHCA ng/L	12 BHCB ng/L	13 BHCG ng/L	14 CHLA ng/L	15 CHLG ng/L	16 DIEL ng/L	17 DMDT ng/L	18 END1 ng/L	19 END2 ng/L	20 ENDR ng/L	21 ENDS ng/L
1 26/10/82 13:50	0.15	1<W	2	1<W	1<W	2<W	2<W	2<W	5<W	2<W	0!QU	4<W	0!QU

STATION #2 Don River @ Front St.

# Date and Time	FLOW m3/s	10 ALDR ng/L	11 BHCA ng/L	12 BHCB ng/L	13 BHCG ng/L	14 CHLA ng/L	15 CHLG ng/L	16 DIEL ng/L	17 DMDT ng/L	18 END1 ng/L	19 END2 ng/L	20 ENDR ng/L	21 ENDS ng/L
1 26/10/82 14:15	1.78	1<W	7	5	12	2<W	2<W	2<W	5<W	2<W	4<W	4<W	4<W

STATION #3 Humber River @ Bloor St.

# Date and Time	FLOW m3/s	10 ALDR ng/L	11 BHCA ng/L	12 BHCB ng/L	13 BHCG ng/L	14 CHLA ng/L	15 CHLG ng/L	16 DIEL ng/L	17 DMDT ng/L	18 END1 ng/L	19 END2 ng/L	20 ENDR ng/L	21 ENDS ng/L
1 26/10/82 15:25	3.79	1<W	2	1<W	1<W	2<W	2<W	2<W	5<W	2<W	0!QU	4<W	0!QU

STATION #4 Mimico Creek @ QEW Offramp

# Date and Time	FLOW m3/s	10 ALDR ng/L	11 BHCA ng/L	12 BHCB ng/L	13 BHCG ng/L	14 CHLA ng/L	15 CHLG ng/L	16 DIEL ng/L	17 DMDT ng/L	18 END1 ng/L	19 END2 ng/L	20 ENDR ng/L	21 ENDS ng/L
1 26/10/82 14:50	0.41	1<W	7	7	4	4	2<W	2<W	5<W	2<W	0!QU	4<W	0!QU

STATION #5 Black Creek @ Scarlett Rd.

# Date and Time	FLOW m3/s	10 ALDR ng/L	11 BHCA ng/L	12 BHCB ng/L	13 BHCG ng/L	14 CHLA ng/L	15 CHLG ng/L	16 DIEL ng/L	17 DMDT ng/L	18 END1 ng/L	19 END2 ng/L	20 ENDR ng/L	21 ENDS ng/L
1 26/10/82 11:45	0.25	1<W	2	1<W	2	2<W	2<W	2<W	5<W	2<W	0!QU	4<W	0!QU

STATION #6 Humber River @ Scarlett Rd.

# Date and Time	FLOW m3/s	10 ALDR ng/L	11 BHCA ng/L	12 BHCB ng/L	13 BHCG ng/L	14 CHLA ng/L	15 CHLG ng/L	16 DIEL ng/L	17 DMDT ng/L	18 END1 ng/L	19 END2 ng/L	20 ENDR ng/L	21 ENDS ng/L
1 26/10/82 11:30	2.59	1<W	2	1<W	1<W	2<W	2<W	2<W	5<W	2<W	0!QU	4<W	0!QU

STATION #7 Humber River @ Lawrence Ave.

# Date and Time	FLOW m3/s	10 ALDR ng/L	11 BHCA ng/L	12 BHCB ng/L	13 BHCG ng/L	14 CHLA ng/L	15 CHLG ng/L	16 DIEL ng/L	17 DMDT ng/L	18 END1 ng/L	19 END2 ng/L	20 ENDR ng/L	21 ENDS ng/L
1 26/10/82 10:45	2.76	1<W	3	1<W	5	2<W	2<W	2<W	5<W	2<W	0!QU	4<W	0!QU

STATION #8 West Humber @ Main Humber

# Date and Time	FLOW m3/s	10 ALDR ng/L	11 BHCA ng/L	12 BHCB ng/L	13 BHCG ng/L	14 CHLA ng/L	15 CHLG ng/L	16 DIEL ng/L	17 DMDT ng/L	18 END1 ng/L	19 END2 ng/L	20 ENDR ng/L	21 ENDS ng/L
1 26/10/82 09:50	0.41	1<W	4	1<W	5	2<W	2<W	2<W	5<W	2<W	0!QU	4<W	0!QU

STATION #9 Main Humber @ West Humber

# Date and Time	FLOW m3/s	10 ALDR ng/L	11 BHCA ng/L	12 BHCB ng/L	13 BHCG ng/L	14 CHLA ng/L	15 CHLG ng/L	16 DIEL ng/L	17 DMDT ng/L	18 END1 ng/L	19 END2 ng/L	20 ENDR ng/L	21 ENDS ng/L
1 26/10/82 09:50	1.67	1<W	2	1<W	3	2<W	2<W	2<W	5<W	2<W	0!QU	4<W	0!QU

STATION #10 Humber River @ Steeles Ave.

# Date and Time	FLOW m3/s	10 ALDR ng/L	11 BHCA ng/L	12 BHCB ng/L	13 BHCG ng/L	14 CHLA ng/L	15 CHLG ng/L	16 DIEL ng/L	17 DMDT ng/L	18 END1 ng/L	19 END2 ng/L	20 ENDR ng/L	21 ENDS ng/L
1 26/10/82 09:55	2.30	1<W	10	1<W	1<W	2<W	2<W	2<W	5<W	2<W	4<W	4<W	4<W

STATION #11 Black Creek @ Lawrence Ave.

# Date and Time	FLOW m3/s	10 ALDR ng/L	11 BHCA ng/L	12 BHCB ng/L	13 BHCG ng/L	14 CHLA ng/L	15 CHLG ng/L	16 DIEL ng/L	17 DMDT ng/L	18 END1 ng/L	19 END2 ng/L	20 ENDR ng/L	21 ENDS ng/L
1 26/10/82 11:10	0.10	1<W	4	1<W	5	2<W	2<W	2<W	5<W	2<W	0!QU	4<W	0!QU

TORONTO AREA WATERSHED MANAGEMENT STUDY
WATER QUALITY DATA
DRY EVENT 2 - OCTOBER 26, 1982

Pesticides and Organic Parameters

STATION #1 Taylor Creek

# Date and Time	FLOW m3/s	22 HEPE ng/L	23 HEPT ng/L	24 MIRX ng/L	25 OCHL ng/L	26 OPDT ng/L	27 PCBT ng/L	28 PPDD ng/L	29 PPDE ng/L	30 PPDT ng/L	31 245T ng/L	32 24D ng/L	33 24DB ng/L
1 26/10/82 13:50	0.15	1<W	1<W	5<W	2<W	5<W	20<W	5<W	1<W	5<W	50<W	100<W	200<W

STATION #2 Don River @ Front St.

# Date and Time	FLOW m3/s	22 HEPE ng/L	23 HEPT ng/L	24 MIRX ng/L	25 OCHL ng/L	26 OPDT ng/L	27 PCBT ng/L	28 PPDD ng/L	29 PPDE ng/L	30 PPDT ng/L	31 245T ng/L	32 24D ng/L	33 24DB ng/L
1 26/10/82 14:15	1.78	1<W	1<W	5<W	2<W	5<W	20<W	5<W	1<W	5<W	50<W	100<W	200<W

STATION #3 Humber River @ Bloor St.

# Date and Time	FLOW m3/s	22 HEPE ng/L	23 HEPT ng/L	24 MIRX ng/L	25 OCHL ng/L	26 OPDT ng/L	27 PCBT ng/L	28 PPDD ng/L	29 PPDE ng/L	30 PPDT ng/L	31 245T ng/L	32 24D ng/L	33 24DB ng/L
1 26/10/82 15:25	3.79	1<W	1<W	5<W	2<W	5<W	20<W	5<W	1<W	5<W	50<W	100<W	200<W

STATION #4 Mimico Creek @ QEW Offramp

# Date and Time	FLOW m3/s	22 HEPE ng/L	23 HEPT ng/L	24 MIRX ng/L	25 OCHL ng/L	26 OPDT ng/L	27 PCBT ng/L	28 PPDD ng/L	29 PPDE ng/L	30 PPDT ng/L	31 245T ng/L	32 24D ng/L	33 24DB ng/L
1 26/10/82 14:50	0.41	1<W	1<W	5<W	2<W	5<W	20<W	5<W	1<W	5<W	50<W	100<W	200<W

STATION #5 Black Creek @ Scarlett Rd.

# Date and Time	FLOW m3/s	22 HEPE ng/L	23 HEPT ng/L	24 MIRX ng/L	25 OCHL ng/L	26 OPDT ng/L	27 PCBT ng/L	28 PPDD ng/L	29 PPDE ng/L	30 PPDT ng/L	31 245T ng/L	32 24D ng/L	33 24DB ng/L
1 26/10/82 11:45	0.25	1<W	1<W	5<W	2<W	5<W	20<W	5<W	1<W	5<W	50<W	100<W	200<W

STATION #6 Humber River @ Scarlett Rd.

#	Date and Time	FLOW m3/s	22 HEPE ng/L	23 HEPT ng/L	24 MIRX ng/L	25 OCHL ng/L	26 OPDT ng/L	27 PCBT ng/L	28 PPDD ng/L	29 PPDE ng/L	30 PPDT ng/L	31 245T ng/L	32 24D ng/L	33 24DB ng/L
1	26/10/82 11:30	2.59	1<W	1<W	5<W	2<W	5<W	20<W	5<W	1<W	5<W	50<W	100<W	200<W

STATION #7 Humber River @ Lawrence Ave.

#	Date and Time	FLOW m3/s	22 HEPE ng/L	23 HEPT ng/L	24 MIRX ng/L	25 OCHL ng/L	26 OPDT ng/L	27 PCBT ng/L	28 PPDD ng/L	29 PPDE ng/L	30 PPDT ng/L	31 245T ng/L	32 24D ng/L	33 24DB ng/L
1	26/10/82 10:45	2.76	1<W	1<W	5<W	2<W	5<W	20<W	5<W	1<W	5<W	50<W	100<W	200<W

STATION #8 West Humber @ Main Humber

#	Date and Time	FLOW m3/s	22 HEPE ng/L	23 HEPT ng/L	24 MIRX ng/L	25 OCHL ng/L	26 OPDT ng/L	27 PCBT ng/L	28 PPDD ng/L	29 PPDE ng/L	30 PPDT ng/L	31 245T ng/L	32 24D ng/L	33 24DB ng/L
1	26/10/82 09:50	0.41	1<W	1<W	5<W	2<W	5<W	20<W	5<W	1<W	5<W	50<W	100<W	200<W

STATION #9 Main Humber @ West Humber

#	Date and Time	FLOW m3/s	22 HEPE ng/L	23 HEPT ng/L	24 MIRX ng/L	25 OCHL ng/L	26 OPDT ng/L	27 PCBT ng/L	28 PPDD ng/L	29 PPDE ng/L	30 PPDT ng/L	31 245T ng/L	32 24D ng/L	33 24DB ng/L
1	26/10/82 09:50	1.67	1<W	1<W	5<W	2<W	5<W	20<W	5<W	1<W	5<W	50<W	100<W	200<W

STATION #10 Humber River @ Steeles Ave.

#	Date and Time	FLOW m3/s	22 HEPE ng/L	23 HEPT ng/L	24 MIRX ng/L	25 OCHL ng/L	26 OPDT ng/L	27 PCBT ng/L	28 PPDD ng/L	29 PPDE ng/L	30 PPDT ng/L	31 245T ng/L	32 24D ng/L	33 24DB ng/L
1	26/10/82 09:55	2.30	1<W	1<W	5<W	2<W	5<W	20<W	5<W	1<W	5<W	50<W	100<W	200<W

STATION #11 Black Creek @ Lawrence Ave.

#	Date and Time	FLOW m3/s	22 HEPE ng/L	23 HEPT ng/L	24 MIRX ng/L	25 OCHL ng/L	26 OPDT ng/L	27 PCBT ng/L	28 PPDD ng/L	29 PPDE ng/L	30 PPDT ng/L	31 245T ng/L	32 24D ng/L	33 24DB ng/L
1	26/10/82 11:10	0.10	1<W	1<W	5<W	2<W	5<W	20<W	5<W	1<W	5<W	50<W	230	200<W

TORONTO AREA WATERSHED MANAGEMENT STUDY
WATER QUALITY DATA
DRY EVENT 2 - OCTOBER 26, 1982

Pesticides and Organic Parameters

STATION #1 Taylor Creek

		34	35	36	37	38	39	40	41	42	43	44
	FLOW	24DP	DICA	PICL	SILV	HCB	234	2345	2356	245	246	PCPH
# Date and Time	m3/s	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L
1 26/10/82 13:50	0.15	100<W	100<W	100<W	50<W	1<W	100<W	50<W	50<W	50<W	50<W	50<W

STATION #2 Don River @ Front St.

		34	35	36	37	38	39	40	41	42	43	44
	FLOW	24DP	DICA	PICL	SILV	HCB	234	2345	2356	245	246	PCPH
# Date and Time	m3/s	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L
1 26/10/82 14:15	1.78	100<W	100<W	100<W	50<W	3	100<W	50<W	50<W	50<W	50<W	50<W

STATION #3 Humber River @ Bloor St.

		34	35	36	37	38	39	40	41	42	43	44
	FLOW	24DP	DICA	PICL	SILV	HCB	234	2345	2356	245	246	PCPH
# Date and Time	m3/s	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L
1 26/10/82 15:25	3.79	100<W	100<W	100<W	50<W	1<W	100<W	50<W	50<W	50<W	50<W	50<W

STATION #4 Mimico Creek @ QEW Offramp

		34	35	36	37	38	39	40	41	42	43	44
	FLOW	24DP	DICA	PICL	SILV	HCB	234	2345	2356	245	246	PCPH
# Date and Time	m3/s	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L
1 26/10/82 14:50	0.41	100<W	100<W	100<W	50<W	1<W	100<W	50<W	50<W	50<W	50<W	210

STATION #5 Black Creek @ Scarlett Rd.

		34	35	36	37	38	39	40	41	42	43	44
	FLOW	24DP	DICA	PICL	SILV	HCB	234	2345	2356	245	246	PCPH
# Date and Time	m3/s	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L
1 26/10/82 11:45	0.25	100<W	100<W	100<W	50<W	1<W	100<W	50<W	50<W	50<W	50<W	50<W

STATION #6 Humber River @ Scarlett Rd.

#	Date and Time	FLOW m3/s	34 24DP ng/L	35 DICA ng/L	36 PICL ng/L	37 SILV ng/L	38 HCB ng/L	39 234 ng/L	40 2345 ng/L	41 2356 ng/L	42 245 ng/L	43 246 ng/L	44 PCPH ng/L
1	26/10/82 11:30	2.59	100<W	100<W	100<W	50<W	1<W	100<W	50<W	50<W	50<W	50<W	50<W

STATION #7 Humber River @ Lawrence Ave.

#	Date and Time	FLOW m3/s	34 24DP ng/L	35 DICA ng/L	36 PICL ng/L	37 SILV ng/L	38 HCB ng/L	39 234 ng/L	40 2345 ng/L	41 2356 ng/L	42 245 ng/L	43 246 ng/L	44 PCPH ng/L
1	26/10/82 10:45	2.76	100<W	100<W	100<W	50<W	1<W	100<W	50<W	50<W	50<W	50<W	50<W

STATION #8 West Humber @ Main Humber

#	Date and Time	FLOW m3/s	34 24DP ng/L	35 DICA ng/L	36 PICL ng/L	37 SILV ng/L	38 HCB ng/L	39 234 ng/L	40 2345 ng/L	41 2356 ng/L	42 245 ng/L	43 246 ng/L	44 PCPH ng/L
1	26/10/82 09:50	0.41	100<W	100<W	100<W	50<W	1<W	100<W	50<W	50<W	50<W	50<W	50<W

STATION #9 Main Humber @ West Humber

#	Date and Time	FLOW m3/s	34 24DP ng/L	35 DICA ng/L	36 PICL ng/L	37 SILV ng/L	38 HCB ng/L	39 234 ng/L	40 2345 ng/L	41 2356 ng/L	42 245 ng/L	43 246 ng/L	44 PCPH ng/L
1	26/10/82 09:50	1.67	100<W	100<W	100<W	50<W	1<W	100<W	50<W	50<W	50<W	50<W	50<W

STATION #10 Humber River @ Steeles Ave.

#	Date and Time	FLOW m3/s	34 24DP ng/L	35 DICA ng/L	36 PICL ng/L	37 SILV ng/L	38 HCB ng/L	39 234 ng/L	40 2345 ng/L	41 2356 ng/L	42 245 ng/L	43 246 ng/L	44 PCPH ng/L
1	26/10/82 09:55	2.30	100<W	100<W	100<W	50<W	1<W	100<W	50<W	50<W	50<W	50<W	50<W

STATION #11 Black Creek @ Lawrence Ave.

#	Date and Time	FLOW m3/s	34 24DP ng/L	35 DICA ng/L	36 PICL ng/L	37 SILV ng/L	38 HCB ng/L	39 234 ng/L	40 2345 ng/L	41 2356 ng/L	42 245 ng/L	43 246 ng/L	44 PCPH ng/L
1	26/10/82 11:10	0.10	100<W	100<W	100<W	50<W	1<W	100<W	50<W	50<W	50<W	50<W	50<W

TORONTO AREA WATERSHED MANAGEMENT STUDY
WATER QUALITY DATA
WET EVENT 1 - OCTOBER 20, 1982

Conventional Water Quality Parameters and Bacteria

STATION #1 Taylor Creek

# Date and Time	FLOW m3/s	BOD5 mg/L O	NH4 mg/L N	pH	Phosphates Filt,react mg/L P	Phosphorus Unf,total mg/L P	Residue Filtra. mg/L	Residue Partic. mg/L	Fecal Coliform #/100mL	Fecal Strep #/100mL
1 20/10/82 07:00	0.13	2.46	0.050	8.08	0.0110	0.026	827.	2.85	4400A	380
2 20/10/82 13:50	0.15	0.18<T	0.014	8.25	0.0185	0.048	812.	6.92	12300	2000
3 20/10/82 14:20	0.21	3.30	0.012	8.05	0.0550	0.220	643.	25.40	1900A	9400
4 20/10/82 14:50	0.26	4.56	0.006	7.65	0.0460	0.275	507.	38.40	21000	10000
5 20/10/82 15:00	0.54	2.16	0.008	8.10	0.0390	0.255	647.	53.70	4300	2200
6 20/10/82 15:30	0.85	13.40	0.204	7.46	0.0510	0.390	538.	140.00	27000	9700
Minimum :	0.13	0.18	0.006	7.46	0.0110	0.026	507.	2.85	1900.	380.
Maximum :	1.16	13.40	0.204	8.25	0.0550	0.390	827.	140.00	27000.	10000.
Mean :	0.56	4.43	0.049	7.93	0.0367	0.202	671.	44.55	7941.	3393.

STATION #2 Don River @ Front St.

# Date and Time	FLOW m3/s	BOD5 mg/L O	NH4 mg/L N	pH	Phosphates Filt,react mg/L P	Phosphorus Unf,total mg/L P	Residue Filtra. mg/L	Residue Partic. mg/L	Fecal Coliform #/100mL	Fecal Strep #/100mL
1 20/10/82 07:22	1.82	11.20	1.000	7.80	0.0820	0.195	638.	9.67	3900	1400
2 20/10/82 13:05	4.25	5.82	0.032	8.38	0.0730	0.190	640.	10.10	1900	400<=>
3 20/10/82 14:00	5.56	4.60	1.610	7.91	0.0790	0.195	641.	7.92	1500	200<=>
4 20/10/82 15:00	12.96	7.14	0.014	8.29	0.0900	0.180	632.	16.70	2300	400<=>
5 20/10/82 16:00	12.50	8.28	0.018	8.00	0.0920	0.373	557.	33.00	73000	34000
6 20/10/82 16:30	11.17	7.28	0.014	8.91	0.1450	0.730	591.	43.50	210000A	9900
7 20/10/82 17:00	10.96	9.56	0.010	7.99	0.1350	0.695	633.	96.50	18000A	7700
8 20/10/82 17:30	10.00	9.90	0.012	7.41	0.1650	0.920	578.	63.70	55000	19000
Minimum :	1.82	4.60	0.010	7.41	0.0730	0.180	557.	7.92	1500.	200.
Maximum :	12.96	11.20	1.610	8.91	0.1650	0.920	641.	96.50	210000.	34000.
Mean :	8.65	7.97	0.339	8.09	0.1076	0.435	614.	35.14	11347.	2618.

STATION #3 Humber River @ Bloor St.

# Date and Time	FLOW m3/s	BOD5 mg/L O	NH4 mg/L N	pH	Phosphates Filt,react mg/L P	Phosphorus Unf,total mg/L P	Residue Filtra. mg/L	Residue Partic. mg/L	Fecal Coliform #/100mL	Fecal Strep #/100mL
1 20/10/82 12:30	4.10	0.40<T	0.032	8.28	0.0020<T	0.019	376.	15.50	340	60<=>
2 20/10/82 14:00	4.75	0.68	0.050	8.44	0.0025<T	0.016	379.	5.36	440	90<=>
3 20/10/82 15:00	5.06	1.18	0.030	8.38	0.0020<T	0.019	387.	6.07	1120	4600A>
4 20/10/82 15:30	4.10	1.71	0.046	8.51	0.0020<T	0.026	399.	2.79	4000A	3900A>
Minimum :	4.10	0.40	0.030	8.28	0.0020	0.016	376.	2.79	340.	60.
Maximum :	5.06	1.71	0.050	8.51	0.0025	0.026	399.	15.50	4000.	4600.
Mean :	4.50	0.99	0.040	8.40	0.0021	0.020	385.	7.43	905.	539.

STATION #4 Mimico Creek @ QEW Offramp

#	Date and Time	FLOW m3/s	BOD5 mg/L O	NH4 mg/L N	pH	Phosphates Filt,react mg/L P	Phosphorus Unf,total mg/L P	Residue Filtra. mg/L	Residue Partic. mg/L	Fecal Coliform #/100mL	Fecal Strep #/100mL
1	20/10/82 08:39	0.40	0.40<T	0.042	8.29	0.0140	0.027	757.	4.95	620	620
2	20/10/82 13:58	0.50	35.30	0.430	7.61	0.1750	1.150	543.	104.00	19000	21000
3	20/10/82 14:22	1.36	18.30	0.056	7.34	0.3500	1.450	370.	90.20	4900	16000A>
4	20/10/82 14:54	1.35	17.00	0.390	7.43	0.1150	0.580	237.	61.20	8500	59000
5	20/10/82 15:33	1.86	5.82	0.040	7.83	0.0800	0.188	627.	46.30	6300	10900
6	20/10/82 16:02	1.53	4.50	0.276	8.06	0.1050	0.236	618.	60.40	7500	14000
7	20/10/82 16:29	1.29	7.50	0.040	7.77	0.0820	0.250	561.	37.60	6700	13100
8	20/10/82 17:00	1.09	6.10	0.282	7.52	0.0540	0.185	558.	4.92	6900	13000
	Minimum :	0.40	0.40	0.040	7.34	0.0140	0.027	237.	4.92	620.	620.
	Maximum :	1.86	35.30	0.430	8.29	0.3500	1.450	757.	104.00	19000.	59000.
	Mean :	1.17	11.86	0.194	7.73	0.1219	0.546	534.	51.20	5672.	11562.

STATION #5 Black Creek @ Scarlett Rd.

#	Date and Time	FLOW m3/s	BOD5 mg/L O	NH4 mg/L N	pH	Phosphates Filt,react mg/L P	Phosphorus Unf,total mg/L P	Residue Filtra. mg/L	Residue Partic. mg/L	Fecal Coliform #/100mL	Fecal Strep #/100mL
1	20/10/82 09:00	0.23	1.28	0.008	8.38	0.0230	0.130	952.	7.80	2600	700<=
2	20/10/82 13:00	0.35	0.42<T	0.042	8.36	0.0260	0.135	849.	104.00	1100	900<=>
3	20/10/82 14:00	0.52	26.00	0.038	7.52	0.1050	0.295	642.	28.40	60000A>	13600A>
4	20/10/82 14:45	1.46	33.80	1.930	7.33	0.3250	2.400	593.	129.00	2400000A>	230000A>
5	20/10/82 15:00	1.74	37.70	5.600	6.99	1.3500	2.600	486.	269.00	240000A>	80000A>
6	20/10/82 15:30	3.36	24.70	0.020	7.05	0.1300	0.930	556.	144.00	139000	1110000A>
7	20/10/82 15:45	4.68	5.90	0.026	7.37	0.0510	0.875	558.	302.00	80000A>	32000A>
8	20/10/82 16:30	3.25	11.50	0.006	7.51	0.0280	0.905	426.	235.00	6100	32000
	Minimum :	0.23	0.42	0.006	6.99	0.0230	0.130	426.	7.80	1100.	700.
	Maximum :	4.68	37.70	5.600	8.38	1.3500	2.600	952.	302.00	2400000.	1110000.
	Mean :	1.95	17.66	0.959	7.56	0.2548	1.034	633.	158.65	40114.	25135.

STATION #6 Humber River @ Scarlett Rd.

#	Date and Time	FLOW m3/s	BOD5 mg/L O	NH4 mg/L N	pH	Phosphates Filt,react mg/L P	Phosphorus Unf,total mg/L P	Residue Filtra. mg/L	Residue Partic. mg/L	Fecal Coliform #/100mL	Fecal Strep #/100mL
1	20/10/82 08:26	2.91	0.70	0.020	8.45	0.0040	0.027	390.	11.90	160<=	100<=
2	20/10/82 14:15	3.39	0.26<T	0.016	8.27	0.0040	0.031	357.	10.10	260	1060
3	20/10/82 15:15	3.59	1.04	0.010	8.47	0.0140	0.065	374.	11.90	580	960
4	20/10/82 16:10	4.57	0.10<T	0.014	8.40	0.0095	0.034	369.	9.87	9200A>	4200A>
5	20/10/82 16:40	4.19	1.88	0.012	7.94	0.0120	0.060	396.	14.10	8400A>	4600A>
6	20/10/82 17:50	4.74	1.91	0.022	8.08	0.0080	0.043	389.	17.00	4800A>	2200
7	20/10/82 18:25	4.95	1.39	0.016	8.30	0.0110	0.045	371.	19.10	1900	1740
8	20/10/82 19:30	4.67	1.40	0.012	8.31	0.0065	0.030	374.	20.20	2240	1460
	Minimum :	2.91	0.10	0.010	7.94	0.0040	0.027	357.	9.87	160.	100.
	Maximum :	4.95	1.91	0.022	8.47	0.0140	0.065	396.	20.20	9200.	4600.
	Mean :	4.13	1.08	0.015	8.28	0.0086	0.042	378.	14.27	1576.	1331.

STATION #7 Humber River @ Lawrence Ave.

# Date and Time	FLOW m3/s	BOD5 mg/L O	NH4 mg/L N	pH	Phosphates Filt,react mg/L P	Phosphorus Unf,total mg/L P	Residue Filtra. mg/L	Residue Partic. mg/L	Fecal Coliform #/100mL	Fecal Strep #/100mL
1 20/10/82 08:00	3.11	0.00!TX	0.012	8.33	0.0055	0.015	367.	9.23	200	60<=
2 20/10/82 14:05	3.17	2.66	0.004<T	8.44	0.0130	0.020	356.	11.30	2420	960
3 20/10/82 15:05	3.44	0.84	0.026	8.46	0.0070	0.027	364.	9.15	540	960
4 20/10/82 16:05	3.73	1.09	0.022	8.49	0.0060	0.038	372.	8.29	780	1660
5 20/10/82 16:35	3.81	1.40	0.024	8.57	0.0065	0.035	357.	21.60	1620	3800A>
6 20/10/82 17:15	4.50	1.02	0.020	8.54	0.0060	0.030	353.	19.70	1960	4400A>
7 20/10/82 17:45	5.03	1.15	0.014	8.52	0.0075	0.038	349.	8.20	1660	2940
8 20/10/82 18:55	4.38	1.18	0.010	8.45	0.0065	0.038	351.	21.90	2960	2600
Minimum :	3.11	0.84	0.004	8.33	0.0055	0.015	349.	8.20	200.	60.
Maximum :	5.03	2.66	0.026	8.57	0.0130	0.038	372.	21.90	2960.	4400.
Mean :	3.96	1.33	0.017	8.48	0.0073	0.030	359.	13.67	1156.	1360.

STATION #8 West Humber @ Main Humber

# Date and Time	FLOW m3/s	BOD5 mg/L O	NH4 mg/L N	pH	Phosphates Filt,react mg/L P	Phosphorus Unf,total mg/L P	Residue Filtra. mg/L	Residue Partic. mg/L	Fecal Coliform #/100mL	Fecal Strep #/100mL
1 20/10/82 08:17	0.40	1.13	0.012	8.53	0.0045	0.021	439.	8.96	120<=	100<=>
2 20/10/82 14:10	0.56	0.16<T	0.024	8.39	0.0030	0.024	418.	4.98	1980	3220A>
3 20/10/82 14:40	0.64	2.99	0.006	8.53	0.0435	0.085	382.	11.70	6800A>	15200A>
4 20/10/82 15:40	1.04	2.14	0.008	8.22	0.0085	0.047	365.	11.10	9100	13000
5 20/10/82 16:10	1.05	9.00	0.032	8.15	0.0035	0.063	410.	24.70	4900	19000A>
6 20/10/82 16:40	0.90	11.40	0.024	8.20	0.0035	0.075	377.	23.40	1800	7500
7 20/10/82 17:10	0.77	8.30	0.026	8.18	0.0055	0.055	335.	6.31	3800	5500
8 20/10/82 17:40	0.68	5.37	0.026	8.30	0.0040	0.047	340.	5.09	3300	3700
Minimum :	0.40	0.16	0.006	8.15	0.0030	0.021	335.	4.98	120.	100.
Maximum :	1.05	11.40	0.032	8.53	0.0435	0.085	439.	24.70	9100.	19000.
Mean :	0.75	5.06	0.020	8.31	0.0095	0.052	393.	12.03	2520.	4553.

STATION #9 Main Humber @ West Humber

# Date and Time	FLOW m3/s	BOD5 mg/L O	NH4 mg/L N	pH	Phosphates Filt,react mg/L P	Phosphorus Unf,total mg/L P	Residue Filtra. mg/L	Residue Partic. mg/L	Fecal Coliform #/100mL	Fecal Strep #/100mL
1 20/10/82 08:17	1.92	0.33<T	0.004<T	8.41	0.0030	0.031	327.	34.00	120<=	120<=>
2 20/10/82 13:55	1.89	0.34<T	0.012	8.47	0.0030	0.029	331.	18.30	590	980
3 20/10/82 14:55	2.63	0.85	0.024	8.54	0.0125	0.034	349.	15.50	940	3800A>
4 20/10/82 15:25	3.36	4.40	0.006	8.27	0.1500	1.430	0.!SM	0.00!SM	4100	9000<=>
5 20/10/82 16:25	2.89	2.86	0.226	8.11	0.1200	0.455	326.	142.00	4700	25000A>
6 20/10/82 16:55	2.50	2.16	0.172	8.40	0.0850	0.227	319.	79.80	1700	5000<=>
7 20/10/82 17:25	2.26	1.54	0.112	8.33	0.0560	0.115	324.	41.50	3600	6300
8 20/10/82 17:55	2.18	0.40<T	0.080	8.55	0.0410	0.079	334.	27.70	1700	2700
Minimum :	1.89	0.33	0.004	8.11	0.0030	0.029	319.	15.50	120.	120.
Maximum :	3.36	4.40	0.226	8.55	0.1500	1.430	349.	142.00	4700.	25000.
Mean :	2.45	1.61	0.080	8.39	0.0588	0.300	330.	51.26	1380.	3101.

STATION #10 Humber River @ Steeles Ave.

#	Date and Time	FLOW m3/s	BOD5 mg/L O	NH4 mg/L N	pH	Phosphates Filt,react mg/L P	Phosphorus Unf,total mg/L P	Residue Filtra. mg/L	Residue Partic. mg/L	Fecal Coliform #/100mL	Fecal Strep #/100mL
1	20/10/82 07:20	2.49	0.16<T	0.010	8.46	0.0035	0.026	353.	19.10	20<=	40<=
2	20/10/82 13:45	2.49	0.34<T	0.022	8.41	0.0025<T	0.019	354.	9.98	20<=>	40<=
3	20/10/82 14:40	2.55	0.08<T	0.018	8.30	0.0025<T	0.018	338.	10.10	100<=>	40<=
4	20/10/82 15:50	2.67	0.32<T	0.028	8.41	0.0020<T	0.030	352.	8.37	140<=>	260
5	20/10/82 16:25	2.67	0.17<T	0.006	8.44	0.0035	0.038	351.	13.90	160<=	460
6	20/10/82 10:50	2.61	0.44<T	0.026	8.40	0.0010<T	0.035	347.	11.20	260	680
7	20/10/82 17:35	2.61	0.56	0.008	8.44	0.0035<T	0.031	349.	11.00	760	2020
8	20/10/82 18:00	2.61	0.62	0.016	8.48	0.0030	0.031	349.	7.87	1300<=>	3200A>
	Minimum :	2.49	0.08	0.006	8.30	0.0010	0.018	338.	7.87	20.	40.
	Maximum :	2.67	0.62	0.028	8.48	0.0035	0.038	354.	19.10	1300.	3200.
	Mean :	2.59	0.34	0.017	8.42	0.0027	0.029	349.	11.44	148.	276.

STATION #11 Black Creek @ Lawrence Ave.

#	Date and Time	FLOW m3/s	BOD5 mg/L O	NH4 mg/L N	pH	Phosphates Filt,react mg/L P	Phosphorus Unf,total mg/L P	Residue Filtra. mg/L	Residue Partic. mg/L	Fecal Coliform #/100mL	Fecal Strep #/100mL
1	20/10/82 08:35	0.11	0.72	0.040	8.26	0.0180	0.042	764.	4.69	420	440
2	20/10/82 13:40	0.17	9.40	0.278	8.35	0.0450	0.112	647.	51.00	1300	9200A>
3	20/10/82 14:30	0.88	18.20	0.296	7.66	0.0700	0.202	521.	27.00	2700	3600A>
4	20/10/82 14:45	1.96	13.30	0.690	7.94	0.0550	1.150	506.	572.00	8500	7000<=>
5	20/10/82 15:00	1.84	13.10	0.730	7.13	0.1300	1.500	511.	517.00	4300	31000A>
6	20/10/82 15:15	1.76	19.80	0.570	7.09	0.0500	0.875	463.	447.00	4100	14000
7	20/10/82 16:15	1.33	7.16	0.078	7.90	0.0950	0.475	308.	176.00	3700	11000
8	20/10/82 17:15	0.62	5.28	0.014	8.09	0.0755	0.243	381.	67.30	3300	17000
	Minimum :	0.11	0.72	0.014	7.09	0.0180	0.042	308.	4.69	420.	440.
	Maximum :	1.96	19.80	0.730	8.35	0.1300	1.500	764.	572.00	8500.	31000.
	Mean :	1.08	10.87	0.337	7.80	0.0673	0.575	513.	232.75	2685.	7324.

TORONTO AREA WATERSHED MANAGEMENT STUDY
WATER QUALITY DATA
WET EVENT 1 - OCTOBER 20, 1982

Inorganic Parameters (Metals)

STATION #1 Taylor Creek

#	Date and Time	FLOW m3/s	Cadmium mg/L Cd	Chromium mg/L Cr	Copper mg/L Cu	Mercury ug/L Hg	Nickel mg/L Ni	Lead mg/L Pb	Zinc mg/L Zn
1	20/10/82 07:00	0.13	0.0007	0.007	0.017	0.020<	0.002	0.017	0.032
5	20/10/82 15:00	0.54	0.0010	0.005	0.022	0.020	0.002	0.039	0.090
7	20/10/82 16:00	1.16	0.0004	0.012	0.025	0.000	0.005	0.030	0.077
	Minimum :	0.13	0.0004	0.005	0.017	0.000	0.002	0.017	0.032
	Maximum :	1.16	0.0010	0.012	0.025	0.020	0.005	0.039	0.090
	Mean :	0.56	0.0007	0.008	0.021	0.013	0.003	0.029	0.066

STATION #2 Don River @ Front St.

#	Date and Time	FLOW m3/s	Cadmium mg/L Cd	Chromium mg/L Cr	Copper mg/L Cu	Mercury ug/L Hg	Nickel mg/L Ni	Lead mg/L Pb	Zinc mg/L Zn
1	20/10/82 07:22	1.82	0.0008	0.007	0.010	0.020	0.067	0.020	0.066
4	20/10/82 15:00	12.96	0.0008	0.005	0.130	0.020	0.038	0.029	0.097
7	20/10/82 17:00	10.96	0.0004	0.014	0.024	0.070	0.020	0.032	0.640
	Minimum :	1.82	0.0004	0.005	0.010	0.020	0.020	0.020	0.066
	Maximum :	12.96	0.0008	0.014	0.130	0.070	0.067	0.032	0.640
	Mean :	8.65	0.0007	0.009	0.055	0.037	0.042	0.027	0.268

STATION #3 Humber River @ Bloor St.

#	Date and Time	FLOW m3/s	Cadmium mg/L Cd	Chromium mg/L Cr	Copper mg/L Cu	Mercury ug/L Hg	Nickel mg/L Ni	Lead mg/L Pb	Zinc mg/L Zn
1	20/10/82 12:30	4.10	0.0007	0.002	0.006	0.020<	0.001<	0.011	0.005
3	20/10/82 15:00	5.06	0.0006	0.001	0.015	0.020<	0.001<	0.013	0.029
	Minimum :	4.10	0.0006	0.001	0.006	0.020	0.001	0.011	0.005
	Maximum :	5.06	0.0007	0.002	0.015	0.020	0.001	0.013	0.029
	Mean :	4.50	0.0007	0.002	0.010	0.020	0.001	0.012	0.017

STATION #4 Mimico Creek @ QEW Offramp

# Date and Time	FLOW m3/s	Cadmium mg/L Cd	Chromium mg/L Cr	Copper mg/L Cu	Mercury ug/L Hg	Nickel mg/L Ni	Lead mg/L Pb	Zinc mg/L Zn
1 20/10/82 08:39	0.40	0.0002<	0.045	0.019	0.020<	0.056	0.004	0.084
5 20/10/82 15:33	1.86	0.0004	0.025	0.022	0.020<	0.015	0.031	0.050
8 20/10/82 17:00	1.09	0.0010	0.005	0.022	0.020	0.002	0.042	0.082
Minimum :	0.40	0.0002	0.005	0.019	0.020	0.002	0.004	0.050
Maximum :	1.86	0.0010	0.045	0.022	0.020	0.056	0.042	0.084
Mean :	1.17	0.0005	0.025	0.021	0.020	0.024	0.026	0.072

STATION #5 Black Creek @ Scarlett Rd.

# Date and Time	FLOW m3/s	Cadmium mg/L Cd	Chromium mg/L Cr	Copper mg/L Cu	Mercury ug/L Hg	Nickel mg/L Ni	Lead mg/L Pb	Zinc mg/L Zn
1 20/10/82 09:00	0.23	0.0005	0.007	0.015	0.020	0.018	0.006	0.034
3 20/10/82 14:00	0.52	0.0007	0.011	0.017	0.030	0.009	0.033	0.056
5 20/10/82 15:00	1.74	0.0018	0.020	0.072	0.260UCS	0.015	0.200	0.320
8 20/10/82 16:30	3.25	0.0016	0.043	0.051	0.200UCS	0.018	0.180	0.250
Minimum :	0.23	0.0005	0.007	0.015	0.020	0.009	0.006	0.034
Maximum :	4.68	0.0018	0.043	0.072	0.260	0.018	0.200	0.320
Mean :	1.95	0.0012	0.020	0.039	0.127	0.015	0.105	0.165

STATION #6 Humber River @ Scarlett Rd.

# Date and Time	FLOW m3/s	Cadmium mg/L Cd	Chromium mg/L Cr	Copper mg/L Cu	Mercury ug/L Hg	Nickel mg/L Ni	Lead mg/L Pb	Zinc mg/L Zn
1 20/10/82 08:26	2.91	0.0006	0.003	0.008	0.020<	0.001	0.003<	0.038
3 20/10/82 15:15	3.59	0.0002	0.003	0.007	0.020<	0.002	0.006	0.015
4 20/10/82 16:10	4.57	0.0002<	0.004	0.009	0.020<	0.003	0.009	0.015
7 20/10/82 18:25	4.95	0.0002	0.003	0.010	0.020<	0.002	0.013	0.025
Minimum :	2.91	0.0002	0.003	0.007	0.020	0.001	0.003	0.015
Maximum :	4.95	0.0006	0.004	0.010	0.020	0.003	0.013	0.038
Mean :	4.13	0.0003	0.003	0.009	0.020	0.002	0.008	0.023

STATION #7 Humber River @ Lawrence Ave.

#	Date and Time	FLOW m3/s	Cadmium mg/L Cd	Chromium mg/L Cr	Copper mg/L Cu	Mercury ug/L Hg	Nickel mg/L Ni	Lead mg/L Pb	Zinc mg/L Zn
1	20/10/82 08:00	3.11	0.0002<	0.002	0.007	0.020<	0.001	0.003<	0.009
3	20/10/82 15:05	3.44	0.0002<	0.002	0.009	0.020<	0.002	0.008	0.010
7	20/10/82 17:45	5.03	0.0002<	0.003	0.010	0.020<	0.002	0.011	0.029
8	20/10/82 18:55	4.88	0.0002<	0.003	0.008	0.020<	0.002	0.011	0.020
	Minimum :	3.11	0.0002	0.002	0.007	0.020	0.001	0.003	0.009
	Maximum :	5.03	0.0002	0.003	0.010	0.020	0.002	0.011	0.029
	Mean :	3.96	0.0002	0.003	0.009	0.020	0.002	0.008	0.017

STATION #8 West Humber @ Main Humber

#	Date and Time	FLOW m3/s	Cadmium mg/L Cd	Chromium mg/L Cr	Copper mg/L Cu	Mercury ug/L Hg	Nickel mg/L Ni	Lead mg/L Pb	Zinc mg/L Zn
1	20/10/82 08:17	0.40	0.0002	0.003	0.010	0.020<	0.002	0.004	0.005
3	20/10/82 14:40	0.64	0.0002<	0.004	0.010	0.020<	0.002	0.022	0.017
6	20/10/82 16:40	0.90	0.0002	0.003	0.013	0.020	0.003	0.022	0.039
8	20/10/82 17:40	0.68	0.0002	0.003	0.008	0.020<	0.003	0.017	0.012
	Minimum :	0.40	0.0002	0.003	0.008	0.020	0.002	0.004	0.005
	Maximum :	1.05	0.0002	0.004	0.013	0.020	0.003	0.022	0.039
	Mean :	0.75	0.0002	0.003	0.010	0.020	0.003	0.016	0.018

STATION #9 Main Humber @ West Humber

#	Date and Time	FLOW m3/s	Cadmium mg/L Cd	Chromium mg/L Cr	Copper mg/L Cu	Mercury ug/L Hg	Nickel mg/L Ni	Lead mg/L Pb	Zinc mg/L Zn
1	20/10/82 08:17	1.92	0.0002<	0.002	0.005	0.020<	0.002	0.003<	0.001
3	20/10/82 14:55	2.63	0.0002<	0.006	0.006	0.020<	0.002	0.007	0.004
6	20/10/82 16:55	2.50	0.0003	0.014	0.014	0.020	0.005	0.026	0.044
8	20/10/82 17:55	2.18	0.0002	0.006	0.009	0.020<	0.003	0.013	0.018
	Minimum :	1.89	0.0002	0.002	0.005	0.020	0.002	0.003	0.001
	Maximum :	3.36	0.0003	0.014	0.014	0.020	0.005	0.026	0.044
	Mean :	2.45	0.0002	0.007	0.009	0.020	0.003	0.012	0.017

STATION #10 Humber River @ Steeles Ave.

# Date and Time	FLOW m3/s	Cadmium mg/L Cd	Chromium mg/L Cr	Copper mg/L Cu	Mercury ug/L Hg	Nickel mg/L Ni	Lead mg/L Pb	Zinc mg/L Zn
1 20/10/82 07:20	2.49	0.0002<	0.002	0.006	0.020<	0.001<	0.003<	0.003
5 20/10/82 16:25	2.67	0.0002<	0.002	0.008	0.020<	0.001	0.004	0.008
6 20/10/82 10:50	2.61	0.0006	0.002	0.006	0.020<	0.001<	0.017	0.002
8 20/10/82 18:00	2.61	0.0002<	0.002	0.007	0.020<	0.001<	0.003	0.046
Minimum :	2.49	0.0002	0.002	0.006	0.020	0.001	0.003	0.002
Maximum :	2.67	0.0006	0.002	0.008	0.020	0.001	0.017	0.046
Mean :	2.59	0.0003	0.002	0.007	0.020	0.001	0.007	0.015

STATION #11 Black Creek @ Lawrence Ave.

# Date and Time	FLOW m3/s	Cadmium mg/L Cd	Chromium mg/L Cr	Copper mg/L Cu	Mercury ug/L Hg	Nickel mg/L Ni	Lead mg/L Pb	Zinc mg/L Zn
1 20/10/82 08:35	0.11	0.0003	0.004	0.012	0.020<	0.004	0.006	0.052
3 20/10/82 14:30	0.88	0.0006	0.008	0.026	0.030	0.016	0.070	0.110
6 20/10/82 15:15	1.76	0.0017	0.023	0.070	0.080	0.018	0.310	0.430
8 20/10/82 17:15	0.62	0.0005	0.005	0.021	0.290UCS	0.005	0.060	0.150
Minimum :	0.11	0.0003	0.004	0.012	0.020	0.004	0.006	0.052
Maximum :	1.96	0.0017	0.023	0.070	0.290	0.018	0.310	0.430
Mean :	1.08	0.0008	0.010	0.032	0.105	0.011	0.112	0.186

TORONTO AREA WATERSHED MANAGEMENT STUDY
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Pesticides and Organic Parameters

STATION #1 Taylor Creek

# Date and Time	FLOW m3/s	10 ALDR ng/L	11 BHCA ng/L	12 BHCB ng/L	13 BHCG ng/L	14 CHLA ng/L	15 CHLG ng/L	16 DIEL ng/L	17 DMDT ng/L	18 END1 ng/L	19 END2 ng/L	20 ENDR ng/L	21 ENDS ng/L
5 20/10/82 15:00	0.54	1<W	6	1<W	49	11	3	2<W	5<W	2<W	4<W	4<W	4<W
7 20/10/82 16:00	1.16	1<W	20	20	44	12	4	2<W	5<W	2<W	4<W	4<W	4<W

STATION #2 Don River @ Front St.

# Date and Time	FLOW m3/s	10 ALDR ng/L	11 BHCA ng/L	12 BHCB ng/L	13 BHCG ng/L	14 CHLA ng/L	15 CHLG ng/L	16 DIEL ng/L	17 DMDT ng/L	18 END1 ng/L	19 END2 ng/L	20 ENDR ng/L	21 ENDS ng/L
4 20/10/82 15:00	12.96	1<W	4	12	10	2<W	2<W	2<W	5<W	2<W	4<W	4<W	4<W
7 20/10/82 17:00	10.96	1<W	1<W	1<W	1<W	2<W	2<W	2<W	5<W	2<W	4<W	4<W	4<W

STATION #3 Humber River @ Bloor St.

# Date and Time	FLOW m3/s	10 ALDR ng/L	11 BHCA ng/L	12 BHCB ng/L	13 BHCG ng/L	14 CHLA ng/L	15 CHLG ng/L	16 DIEL ng/L	17 DMDT ng/L	18 END1 ng/L	19 END2 ng/L	20 ENDR ng/L	21 ENDS ng/L
3 20/10/82 15:00	5.06	1<W	4	1<W	1<W	2<W	2<W	2<W	5<W	2<W	4<W	4<W	4<W

STATION #4 Mimico Creek @ QEW Offramp

# Date and Time	FLOW m3/s	10 ALDR ng/L	11 BHCA ng/L	12 BHCB ng/L	13 BHCG ng/L	14 CHLA ng/L	15 CHLG ng/L	16 DIEL ng/L	17 DMDT ng/L	18 END1 ng/L	19 END2 ng/L	20 ENDR ng/L	21 ENDS ng/L
5 20/10/82 15:33	1.86	1<W	12	10	4	6	2	2<W	5<W	2<W	4<W	4<W	4<W
8 20/10/82 17:00	1.09	1<W	12	1<W	4	2<W	2<W	2<W	55<W	2<W	4<W	4<W	4<W

STATION #5 Black Creek @ Scarlett Rd.

# Date and Time	FLOW m3/s	10 ALDR ng/L	11 BHCA ng/L	12 BHCB ng/L	13 BHCG ng/L	14 CHLA ng/L	15 CHLG ng/L	16 DIEL ng/L	17 DMDT ng/L	18 END1 ng/L	19 END2 ng/L	20 ENDR ng/L	21 ENDS ng/L
3 20/10/82 14:00	0.52	1<W	1<W	1<W	1<W	2<W	2<W	2<W	5<W	2<W	4<W	4<W	4<W
5 20/10/82 15:00	1.74	1<W	10	10	6	20	14	2<W	5<W	2<W	4<W	4<W	4<W

STATION #6 Humber River @ Scarlett Rd.

#	Date and Time	FLOW m3/s	10 ALDR ng/L	11 BHCA ng/L	12 BHCB ng/L	13 BHCG ng/L	14 CHLA ng/L	15 CHLG ng/L	16 DIEL ng/L	17 DMDT ng/L	18 END1 ng/L	19 END2 ng/L	20 ENDR ng/L	21 ENDS ng/L
3	20/10/82 15:15	3.59	1<W	1<W	1<W	1<W	2<W	2<W	2<W	5<W	2<W	4<W	4<W	4<W
4	20/10/82 16:10	4.57	0!LA	0!LA	0!LA	0!LA	0!LA	0!LA	0!LA	0!LA	0!LA	0!LA	0!LA	0!LA

STATION #7 Humber River @ Lawrence Ave.

#	Date and Time	FLOW m3/s	10 ALDR ng/L	11 BHCA ng/L	12 BHCB ng/L	13 BHCG ng/L	14 CHLA ng/L	15 CHLG ng/L	16 DIEL ng/L	17 DMDT ng/L	18 END1 ng/L	19 END2 ng/L	20 ENDR ng/L	21 ENDS ng/L
3	20/10/82 15:05	3.44	1<W	4	1<W	1<W	2<W	2<W	2<W	5<W	2<W	4<W	4<W	4<W
7	20/10/82 17:45	5.03	1<W	2	1<W	1<W	2<W	2<W	2<W	5<W	2<W	4<W	4<W	4<W

STATION #8 West Humber @ Main Humber

#	Date and Time	FLOW m3/s	10 ALDR ng/L	11 BHCA ng/L	12 BHCB ng/L	13 BHCG ng/L	14 CHLA ng/L	15 CHLG ng/L	16 DIEL ng/L	17 DMDT ng/L	18 END1 ng/L	19 END2 ng/L	20 ENDR ng/L	21 ENDS ng/L
3	20/10/82 14:40	0.64	1<W	3	1<W	1<W	2<W	2<W	2<W	5<W	2<W	4<W	4<W	4<W
6	20/10/82 16:40	0.90	1<W	6	1<W	2	2<W	2<W	2<W	5<W	2<W	4<W	4<W	4<W

STATION #9 Main Humber @ West Humber

#	Date and Time	FLOW m3/s	10 ALDR ng/L	11 BHCA ng/L	12 BHCB ng/L	13 BHCG ng/L	14 CHLA ng/L	15 CHLG ng/L	16 DIEL ng/L	17 DMDT ng/L	18 END1 ng/L	19 END2 ng/L	20 ENDR ng/L	21 ENDS ng/L
3	20/10/82 14:55	2.63	1<W	1<W	1<W	1<W	2<W	2<W	2<W	5<W	2<W	4<W	4<W	4<W
6	20/10/82 16:55	2.50	1<W	3	1<W	4	2<W	2<W	2<W	5<W	2<W	4<W	4<W	4<W

STATION #10 Humber River @ Steeles Ave.

#	Date and Time	FLOW m3/s	10 ALDR ng/L	11 BHCA ng/L	12 BHCB ng/L	13 BHCG ng/L	14 CHLA ng/L	15 CHLG ng/L	16 DIEL ng/L	17 DMDT ng/L	18 END1 ng/L	19 END2 ng/L	20 ENDR ng/L	21 ENDS ng/L
5	20/10/82 16:25	2.67	1<W	1<W	1<W	1<W	2<W	2<W	2<W	5<W	2<W	4<W	4<W	4<W
6	20/10/82 10:50	2.61	1<W	2	1<W	3	2<W	2<W	2<W	5<W	2<W	4<W	4<W	4<W

STATION #11 Black Creek @ Lawrence Ave.

# Date and Time	FLOW m3/s	10 ALDR ng/L	11 BHCA ng/L	12 BHCB ng/L	13 BHCG ng/L	14 CHLA ng/L	15 CHLG ng/L	16 DIEL ng/L	17 DMDT ng/L	18 END1 ng/L	19 END2 ng/L	20 ENDR ng/L	21 ENDS ng/L
3 20/10/82 14:30	0.88	1<W	8	5	8	2<W	2<W	2<W	5<W	2<W	4<W	4<W	4<W
6 20/10/82 15:15	1.76	1<W	13	8	6	2<W	2<W	2<W	4<W	2<W	4<W	4<W	4<W

TORONTO AREA WATERSHED MANAGEMENT STUDY
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Pesticides and Organic Parameters

STATION #1 Taylor Creek

#	Date and Time	FLOW m3/s	22 HEPE ng/L	23 HEPT ng/L	24 MIRX ng/L	25 OCHL ng/L	26 OPDT ng/L	27 PCBT ng/L	28 PPDD ng/L	29 PPDE ng/L	30 PPDT ng/L	31 245T ng/L	32 24D ng/L	33 24DB ng/L
5	20/10/82 15:00	0.54	1<W	1<W	5<W	2<W	5<W	25P54	5<W	1<W	5<W	50<W	425	200<W
7	20/10/82 16:00	1.16	1<W	1<W	5<W	2<W	5<W	20<W	5<W	1<W	5<W	50<W	100<W	200<W

STATION #2 Don River @ Front St.

#	Date and Time	FLOW m3/s	22 HEPE ng/L	23 HEPT ng/L	24 MIRX ng/L	25 OCHL ng/L	26 OPDT ng/L	27 PCBT ng/L	28 PPDD ng/L	29 PPDE ng/L	30 PPDT ng/L	31 245T ng/L	32 24D ng/L	33 24DB ng/L
4	20/10/82 15:00	12.96	1<W	1<W	5<W	2<W	5<W	25P54	5<W	1<W	5<W	50<W	100<W	200<W
7	20/10/82 17:00	10.96	1<W	1<W	5<W	2<W	5<W	75P54	5<W	1<W	5<W	50<W	100<W	200<W

STATION #3 Humber River @ Bloor St.

#	Date and Time	FLOW m3/s	22 HEPE ng/L	23 HEPT ng/L	24 MIRX ng/L	25 OCHL ng/L	26 OPDT ng/L	27 PCBT ng/L	28 PPDD ng/L	29 PPDE ng/L	30 PPDT ng/L	31 245T ng/L	32 24D ng/L	33 24DB ng/L
3	20/10/82 15:00	5.06	1<W	1<W	5<W	2<W	5<W	20<W	5<W	1<W	5<W	50<W	100<W	200<W

STATION #4 Mimico Creek @ QEW Offramp

#	Date and Time	FLOW m3/s	22 HEPE ng/L	23 HEPT ng/L	24 MIRX ng/L	25 OCHL ng/L	26 OPDT ng/L	27 PCBT ng/L	28 PPDD ng/L	29 PPDE ng/L	30 PPDT ng/L	31 245T ng/L	32 24D ng/L	33 24DB ng/L
5	20/10/82 15:33	1.86	1<W	1<W	5<W	2<W	5<W	100P60	5<W	1<W	5<W	50<W	100<W	200<W
8	20/10/82 17:00	1.09	1<W	1<W	5<W	2<W	5<W	0!UI	5<W	1<W	5<W	50<W	100<W	200<W

STATION #5 Black Creek @ Scarlett Rd.

# Date and Time	FLOW m3/s	22 HEPE ng/L	23 HEPT ng/L	24 MIRX ng/L	25 OCHL ng/L	26 OPDT ng/L	27 PCBT ng/L	28 PPDD ng/L	29 PPDE ng/L	30 PPDT ng/L	31 245T ng/L	32 24D ng/L	33 24DB ng/L
3 20/10/82 14:00	0.52	1<W	1<W	5<W	2<W	5<W	0!UI	5<W	1<W	5<W	50<W	100<W	200<W
5 20/10/82 15:00	1.74	1<W	1<W	5<W	2<W	5<W	0!UI	5<W	1<W	5<W	50<W	100<W	200<W

STATION #6 Humber River @ Scarlett Rd.

# Date and Time	FLOW m3/s	22 HEPE ng/L	23 HEPT ng/L	24 MIRX ng/L	25 OCHL ng/L	26 OPDT ng/L	27 PCBT ng/L	28 PPDD ng/L	29 PPDE ng/L	30 PPDT ng/L	31 245T ng/L	32 24D ng/L	33 24DB ng/L
3 20/10/82 15:15	3.59	1<W	1<W	5<W	2<W	5<W	20<W	5<W	1<W	5<W	50<W	100<W	200<W
4 20/10/82 16:10	4.57	0!LA	0!LA	0!LA	0!LA	0!LA	0!LA	0!LA	0!LA	0!LA	50<W	190	200<W

STATION #7 Humber River @ Lawrence Ave.

# Date and Time	FLOW m3/s	22 HEPE ng/L	23 HEPT ng/L	24 MIRX ng/L	25 OCHL ng/L	26 OPDT ng/L	27 PCBT ng/L	28 PPDD ng/L	29 PPDE ng/L	30 PPDT ng/L	31 245T ng/L	32 24D ng/L	33 24DB ng/L
3 20/10/82 15:05	3.44	1<W	1<W	5<W	2<W	5<W	20<W	5<W	1<W	5<W	50<W	100<W	200<W
7 20/10/82 17:45	5.03	1<W	1<W	5<W	2<W	5<W	20<W	5<W	1<W	5<W	50<W	220	200<W

STATION #8 West Humber @ Main Humber

# Date and Time	FLOW m3/s	22 HEPE ng/L	23 HEPT ng/L	24 MIRX ng/L	25 OCHL ng/L	26 OPDT ng/L	27 PCBT ng/L	28 PPDD ng/L	29 PPDE ng/L	30 PPDT ng/L	31 245T ng/L	32 24D ng/L	33 24DB ng/L
3 20/10/82 14:40	0.64	1<W	1<W	5<W	2<W	5<W	20<W	5<W	1<W	5<W	50<W	410	200<W
6 20/10/82 16:40	0.90	1<W	1<W	5<W	2<W	5<W	20<W	5<W	1<W	5<W	50<W	100<W	200<W

STATION #9 Main Humber @ West Humber

# Date and Time	FLOW m3/s	22 HEPE ng/L	23 HEPT ng/L	24 MIRX ng/L	25 OCHL ng/L	26 OPDT ng/L	27 PCBT ng/L	28 PPDD ng/L	29 PPDE ng/L	30 PPDT ng/L	31 245T ng/L	32 24D ng/L	33 24DB ng/L
3 20/10/82 14:55	2.63	1<W	1<W	5<W	2<W	5<W	20<W	5<W	1<W	5<W	50<W	100<W	200<W
6 20/10/82 16:55	2.50	1<W	1<W	5<W	2<W	5<W	20<W	5<W	1<W	5<W	50<W	100<W	200<W

STATION #10 Humber River @ Steeles Ave.

# Date and Time	FLOW m3/s	22 HEPE ng/L	23 HEPT ng/L	24 MIRX ng/L	25 OCHL ng/L	26 OPDT ng/L	27 PCBT ng/L	28 PPDD ng/L	29 PPDE ng/L	30 PPDT ng/L	31 245T ng/L	32 24D ng/L	33 24DB ng/L
5 20/10/82 16:25	2.67	1<W	1<W	5<W	2<W	5<W	20<W	5<W	1<W	5<W	50<W	100<W	200<W
6 20/10/82 10:50	2.61	1<W	1<W	5<W	2<W	5<W	20<W	5<W	1<W	5<W	50<W	100<W	200<W

STATION #11 Black Creek @ Lawrence Ave.

# Date and Time	FLOW m3/s	22 HEPE ng/L	23 HEPT ng/L	24 MIRX ng/L	25 OCHL ng/L	26 OPDT ng/L	27 PCBT ng/L	28 PPDD ng/L	29 PPDE ng/L	30 PPDT ng/L	31 245T ng/L	32 24D ng/L	33 24DB ng/L
3 20/10/82 14:30	0.88	1<W	1<W	5<W	2<W	5<W	20<W	5<W	1<W	5<W	50<W	430	200<W
6 20/10/82 15:15	1.76	1<W	1<W	5<W	2<W	5<W	20<W	5<W	1<W	5<W	50<W	210	200<W

TORONTO AREA WATERSHED MANAGEMENT STUDY
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WET EVENT 1 - OCTOBER 20, 1982

Pesticides and Organic Parameters

STATION #1 Taylor Creek

# Date and Time	FLOW m3/s	34 24DP ng/L	35 DICA ng/L	36 PICL ng/L	37 SILV ng/L	38 HCB ng/L	39 234 ng/L	40 2345 ng/L	41 2356 ng/L	42 245 ng/L	43 246 ng/L	44 PCPH ng/L
5 20/10/82 15:00	0.54	430	100<W	100<W	50<W	1	100<W	50<W	50<W	50<W	50<W	50<W
7 20/10/82 16:00	1.16	100<W	100<W	100<W	50<W	1<W	100<W	50<W	50<W	50<W	50<W	50<W

STATION #2 Don River @ Front St.

# Date and Time	FLOW m3/s	34 24DP ng/L	35 DICA ng/L	36 PICL ng/L	37 SILV ng/L	38 HCB ng/L	39 234 ng/L	40 2345 ng/L	41 2356 ng/L	42 245 ng/L	43 246 ng/L	44 PCPH ng/L
4 20/10/82 15:00	12.96	100<W	100<W	100<W	50<W	28	100<W	50<W	50<W	50<W	50<W	50<W
7 20/10/82 17:00	10.96	100<W	100<W	100<W	50<W	7	100<W	50<W	50<W	50<W	50<W	50<W

STATION #3 Humber River @ Bloor St.

# Date and Time	FLOW m3/s	34 24DP ng/L	35 DICA ng/L	36 PICL ng/L	37 SILV ng/L	38 HCB ng/L	39 234 ng/L	40 2345 ng/L	41 2356 ng/L	42 245 ng/L	43 246 ng/L	44 PCPH ng/L
3 20/10/82 15:00	5.06	100<W	100<W	100<W	50<W	1<W	100<W	50<W	50<W	50<W	50<W	50<W

STATION #4 Mimico Creek @ QEW Offramp

# Date and Time	FLOW m3/s	34 24DP ng/L	35 DICA ng/L	36 PICL ng/L	37 SILV ng/L	38 HCB ng/L	39 234 ng/L	40 2345 ng/L	41 2356 ng/L	42 245 ng/L	43 246 ng/L	44 PCPH ng/L
5 20/10/82 15:33	1.86	100<W	100<W	100<W	50<W	1<W	100<W	50<W	50<W	50<W	50<W	50<W
8 20/10/82 17:00	1.09	100<W	100<W	100<W	50<W	5	100<W	50<W	50<W	50<W	50<W	80

STATION #5 Black Creek @ Scarlett Rd.

# Date and Time	FLOW m3/s	34 24DP ng/L	35 DICA ng/L	36 PICL ng/L	37 SILV ng/L	38 HCB ng/L	39 234 ng/L	40 2345 ng/L	41 2356 ng/L	42 245 ng/L	43 246 ng/L	44 PCPH ng/L
3 20/10/82 14:00	0.52	100<W	100<W	100<W	50<W	1<W	100<W	50<W	50<W	50<W	50<W	50<W
5 20/10/82 15:00	1.74	100<W	100<W	100<W	50<W	1	100<W	50<W	50<W	50<W	50<W	50<W

STATION #6 Humber River @ Scarlett Rd.

# Date and Time	FLOW m3/s	34 24DP ng/L	35 DICA ng/L	36 PICL ng/L	37 SILV ng/L	38 HCB ng/L	39 234 ng/L	40 2345 ng/L	41 2356 ng/L	42 245 ng/L	43 246 ng/L	44 PCPH ng/L
3 20/10/82 15:15	3.59	100<W	100<W	100<W	50<W	1<W	100<W	50<W	50<W	50<W	50<W	50<W
4 20/10/82 16:10	4.57	100<W	100<W	100<W	50<W	0!LA	100<W	50<W	50<W	50<W	50<W	50<W

STATION #7 Humber River @ Lawrence Ave.

# Date and Time	FLOW m3/s	34 24DP ng/L	35 DICA ng/L	36 PICL ng/L	37 SILV ng/L	38 HCB ng/L	39 234 ng/L	40 2345 ng/L	41 2356 ng/L	42 245 ng/L	43 246 ng/L	44 PCPH ng/L
3 20/10/82 15:05	3.44	100<W	100<W	100<W	50<W	1<W	100<W	50<W	50<W	50<W	50<W	50<W
7 20/10/82 17:45	5.03	100<W	100<W	100<W	50<W	1	100<W	50<W	50<W	50<W	50<W	50<W

STATION #8 West Humber @ Main Humber

# Date and Time	FLOW m3/s	34 24DP ng/L	35 DICA ng/L	36 PICL ng/L	37 SILV ng/L	38 HCB ng/L	39 234 ng/L	40 2345 ng/L	41 2356 ng/L	42 245 ng/L	43 246 ng/L	44 PCPH ng/L
3 20/10/82 14:40	0.64	260	100<W	100<W	50<W	2	100<W	50<W	50<W	50<W	50<W	80
6 20/10/82 16:40	0.90	100<W	100<W	100<W	50<W	3	100<W	50<W	50<W	50<W	50<W	50<W

STATION #9 Main Humber @ West Humber

# Date and Time	FLOW m3/s	34 24DP ng/L	35 DICA ng/L	36 PICL ng/L	37 SILV ng/L	38 HCB ng/L	39 234 ng/L	40 2345 ng/L	41 2356 ng/L	42 245 ng/L	43 246 ng/L	44 PCPH ng/L
3 20/10/82 14:55	2.63	100<W	100<W	100<W	50<W	1	100<W	50<W	50<W	50<W	50<W	50<W
6 20/10/82 16:55	2.50	100<W	100<W	100<W	120	1<W	100<W	50<W	50<W	50<W	50<W	50<W

STATION #10 Humber River @ Steeles Ave.

#	Date and Time	FLOW m3/s	34 24DP ng/L	35 DICA ng/L	36 PICL ng/L	37 SILV ng/L	38 HCB ng/L	39 234 ng/L	40 2345 ng/L	41 2356 ng/L	42 245 ng/L	43 246 ng/L	44 PCPH ng/L
5	20/10/82 16:25	2.67	100<W	100<W	100<W	50<W	1<W	100<W	50<W	50<W	50<W	50<W	50<W
6	20/10/82 10:50	2.61	100<W	100<W	100<W	50<W	1<W	100<W	50<W	50<W	50<W	50<W	50<W

STATION #11 Black Creek @ Lawrence Ave.

#	Date and Time	FLOW m3/s	34 24DP ng/L	35 DICA ng/L	36 PICL ng/L	37 SILV ng/L	38 HCB ng/L	39 234 ng/L	40 2345 ng/L	41 2356 ng/L	42 245 ng/L	43 246 ng/L	44 PCPH ng/L
3	20/10/82 14:30	0.88	100<W	100<W	100<W	50	14	100<W	50<W	50<W	50<W	50<W	50<W
6	20/10/82 15:15	1.76	100<W	100<W	100<W	50<W	1<W	100<W	50<W	50<W	50<W	50<W	50<W

TORONTO AREA WATERSHED MANAGEMENT STUDY
WATER QUALITY DATA
WET EVENT 2 - NOVEMBER 3 TO NOVEMBER 5, 1982

Conventional Water Quality Parameters and Bacteria

STATION #1 Taylor Creek

# Date and Time	FLOW m3/s	BOD5 mg/L O	NH4 mg/L N	pH	Phosphates Filt,react mg/L P	Phosphorus Unf,total mg/L P	Residue Filtra. mg/L	Residue Partic. mg/L	Fecal Coliform #/100mL	Fecal Strep #/100mL
1 03/11/82 16:00	0.32	1.08	0.002<T	8.32	0.0480	0.083	419.	6.90	400U72	100<
2 03/11/82 17:00	0.33	0.79	0.002<T	8.25	0.0490	0.093	231.	7.24	600U72	500U72
3 03/11/82 18:00	0.40	1.17	0.002<T	8.24	0.0490	0.110	436.	14.30	900U72	800U72
4 03/11/82 19:00	0.52	1.49	0.002<T	8.27	0.0560	0.115	445.	17.20	1500U72	600U72
5 03/11/82 21:00	0.74	1.90	0.006	8.45	0.0650	0.147	394.	33.20	1000<	3000U72
6 03/11/82 23:00	1.43	2.80	0.018	8.04	0.0530	0.230	343.	81.10	2000U72	2000U72
7 04/11/82 01:00	2.04	2.48	0.004	7.95	0.0630	0.400	220.	150.00	1000<	4000U72
8 04/11/82 03:20	2.04	2.02	0.026	7.93	0.0900	0.280	159.	170.00	1000U72	3000U72
9 04/11/82 14:05	1.27	1.46	0.034	7.78	0.0530	0.160	231.	66.90	4100U72	3000U72
Minimum :	0.32	0.79	0.002	7.78	0.0480	0.083	159.	6.90	400.	100.
Maximum :	2.04	2.80	0.034	8.45	0.0900	0.400	445.	170.00	4100.	4000.
Mean :	1.01	1.69	0.011	8.14	0.0584	0.180	320.	60.76	1115.	1201.

STATION #2 Don River @ Front St.

# Date and Time	FLOW m3/s	BOD5 mg/L O	NH4 mg/L N	pH	Phosphates Filt,react mg/L P	Phosphorus Unf,total mg/L P	Residue Filtra. mg/L	Residue Partic. mg/L	Fecal Coliform #/100mL	Fecal Strep #/100mL
1 03/11/82 19:30	9.22	2.16	0.004<T	8.32	0.0580	0.400	345.	211.00	2800U72	3900U72
2 03/11/82 23:10	20.67	4.50	0.004<T	7.69	0.0980	0.362	363.	143.00	4000U72	5100U72
3 04/11/82 02:00	25.20	3.90	0.004<T	8.12	0.1200	0.375	370.	142.00	11300U72	8100U72
4 04/11/82 04:30	25.41	3.08	0.004<T	8.18	0.0650	0.330	278.	177.00	6200U72	4100U72
5 04/11/82 07:00	22.30	2.54	0.004<T	8.25	0.0710	0.352	255.	205.00	2400U72	3600U72
6 04/11/82 08:00	21.70	2.36	0.004<T	8.14	0.0640	0.400	236.	237.00	1800U72	1500U72
7 04/11/82 14:48	20.25	2.64	0.004<T	8.28	0.0630	0.380	262.	212.00	3700U72	2800U72
8 04/11/82 22:16	17.21	4.50	0.006	8.14	0.0670	0.352	323.	213.00	2700U72	2400U72
Minimum :	9.22	2.16	0.004	7.69	0.0580	0.330	236.	142.00	1800.	1500.
Maximum :	25.41	4.50	0.006	8.32	0.1200	0.400	370.	237.00	11300.	8100.
Mean :	20.25	3.21	0.004	8.14	0.0758	0.369	304.	192.50	3683.	3527.

STATION #3 Humber River @ Bloor St.

#	Date and Time	FLOW m3/s	BOD5 mg/L O	NH4 mg/L N	pH	Phosphates Filt,react mg/L P	Phosphorus Unf,total mg/L P	Residue Filtra. mg/L	Residue Partic. mg/L	Fecal Coliform #/100mL	Fecal Strep #/100mL
1	03/11/82 19:00	15.34	2.20	0.008	8.11	0.0390	0.425	381.	286.00	500U72	3100U72
2	03/11/82 23:45	19.53	2.08	0.012	7.83	0.0610	0.297	376.	319.00	1000U72	3000U72
3	04/11/82 01:00	23.35	2.63	0.004<T	7.71	0.0470	0.312	353.	220.00	18000U72	53000U72
4	04/11/82 04:30	27.09	2.05	0.012	8.31	0.0350	0.267	319.	195.00	900U72	2300U72
5	04/11/82 16:30	34.80	2.17	0.006	8.13	0.0490	0.392	318.	272.00	1000<	2000U72
6	05/11/82 07:00	37.39	1.90	0.044	8.30	0.0510	0.420	369.	288.00	1000<	1000<
7	05/11/82 15:00	30.54	1.63	0.002<T	8.31	0.0580	0.342	389.	212.00	2000<=>	1000<
8	05/11/82 20:45	38.77	1.58	0.002<T	8.42	0.0530	0.255	347.	163.00	500<=>	3500
	Minimum :	15.34	1.58	0.002	7.71	0.0350	0.255	318.	163.00	500.	1000.
	Maximum :	38.77	2.63	0.044	8.42	0.0610	0.425	389.	319.00	18000.	53000.
	Mean :	28.35	2.03	0.011	8.14	0.0491	0.339	357.	244.38	1299.	3072.

STATION #4 Mimico Creek @ QEW Offramp

#	Date and Time	FLOW m3/s	BOD5 mg/L O	NH4 mg/L N	pH	Phosphates Filt,react mg/L P	Phosphorus Unf,total mg/L P	Residue Filtra. mg/L	Residue Partic. mg/L	Fecal Coliform #/100mL	Fecal Strep #/100mL
1	03/11/82 15:10	2.91	1.50	0.010	8.15	0.0820	0.250	309.	96.60	300U72	1100U72
2	03/11/82 17:50	2.83	1.67	0.002<T	8.00	0.0750	0.205	337.	67.20	400U72	1500U72
3	03/11/82 20:00	2.45	1.08	0.004<T	8.22	0.0670	0.180	350.	55.20	100<	400U72
4	03/11/82 22:20	3.39	1.35	0.002<T	8.04	0.0650	0.182	337.	47.80	100U72	1900U72
5	03/11/82 23:55	4.41	1.64	0.012	8.25	0.0760	0.175	298.	62.80	500U72	900U72
6	04/11/82 01:30	5.46	2.25	0.002<T	8.15	0.0830	0.475	237.	261.00	1800U72	2300U72
7	04/11/82 16:00	9.71	2.33	0.002<T	8.09	0.0930	0.432	247.	255.00	1200U72	1900U72
8	05/11/82 02:30	6.09	1.44	0.006	7.98	0.0820	0.237	290.	120.00	700<=>	1000
	Minimum :	2.45	1.08	0.002	7.98	0.0650	0.175	237.	47.80	100.	400.
	Maximum :	9.71	2.33	0.012	8.25	0.0930	0.475	350.	261.00	1800.	2300.
	Mean :	4.66	1.66	0.005	8.11	0.0779	0.267	301.	120.70	417.	1221.

STATION #5 Black Creek @ Scarlett Rd.

#	Date and Time	FLOW m3/s	BOD5 mg/L O	NH4 mg/L N	pH	Phosphates Filt,react mg/L P	Phosphorus Unf,total mg/L P	Residue Filtra. mg/L	Residue Partic. mg/L	Fecal Coliform #/100mL	Fecal Strep #/100mL
1	03/11/82 16:00	1.41	3.17	0.002<T	7.76	0.0610	0.250	265.	93.50	1800U72	4100U72
2	04/11/82 00:10	5.89	2.80	0.002<T	7.73	0.0470	0.183	430.	55.60	1000<	7000U72
3	04/11/82 00:50	6.17	3.03	0.002<T	8.06	0.0440	0.215	228.	82.30	1000U72	1000<
4	04/11/82 04:00	6.32	1.71	0.004<T	8.11	0.0380	0.135	232.	57.80	1000U72	2000U72
5	04/11/82 08:00	6.97	1.50	0.002<T	8.05	0.0500	0.180	216.	84.00	2200U72	1800U72
6	04/11/82 15:00	5.75	2.05	0.002<T	8.33	0.0600	0.212	260.	96.90	2000U72	3000U72
7	04/11/82 16:30	6.46	2.20	0.010	8.12	0.0520	0.175	280.	77.90	1000<	1000U72
8	04/11/82 18:00	4.94	1.97	0.006	8.10	0.0550	0.160	318.	67.50	2100U72	3100U72
	Minimum :	1.41	1.50	0.002	7.73	0.0380	0.135	216.	55.60	1000.	1000.
	Maximum :	6.97	3.17	0.010	8.33	0.0610	0.250	430.	96.90	2200.	7000.
	Mean :	5.49	2.30	0.004	8.03	0.0509	0.189	279.	76.94	1421.	2360.

STATION #6 Humber River @ Scarlett Rd.

#	Date and Time	FLOW m3/s	BOD5 mg/L O	NH4 mg/L N	pH	Phosphates Filt,react mg/L P	Phosphorus Unf,total mg/L P	Residue Filtra. mg/L	Residue Partic. mg/L	Fecal Coliform #/100mL	Fecal Strep #/100mL
1	03/11/82 19:15	19.44	1.76	0.002<T	8.35	0.0790	0.372	352.	227.00	700U72	1200U72
2	03/11/82 23:00	21.14	1.63	0.002<T	8.41	0.0680	0.400	354.	208.00	700U72	1200U72
3	03/11/82 23:30	21.72	2.04	0.002<T	8.29	0.0380	0.285	323.	230.00	400U72	2000U72
4	04/11/82 01:30	24.32	1.81	0.002<T	8.40	0.0290	0.257	308.	165.00	100U72	2500U72
5	04/11/82 03:00	24.53	1.73	0.002<T	8.41	0.0320	0.262	308.	215.00	600U72	2200U72
6	04/11/82 04:30	25.25	1.75	0.002<T	8.11	0.0430	0.360	301.	274.00	200U72	2200U72
7	05/11/82 01:15	43.75	2.22	0.002<T	8.18	0.0460	0.423	340.	357.00	200<=>	2200
8	05/11/82 20:30	28.02	2.52	0.002<T	8.21	0.0480	0.232	354.	166.00	1400	2300
	Minimum :	19.44	1.63	0.002	8.11	0.0290	0.232	301.	165.00	100.	1200.
	Maximum :	43.75	2.52	0.002	8.41	0.0790	0.423	354.	357.00	1400.	2500.
	Mean :	26.02	1.93	0.002	8.30	0.0479	0.324	330.	230.25	400.	1909.

STATION #7 Humber River @ Lawrence Ave.

#	Date and Time	FLOW m3/s	BOD5 mg/L O	NH4 mg/L N	pH	Phosphates Filt,react mg/L P	Phosphorus Unf,total mg/L P	Residue Filtra. mg/L	Residue Partic. mg/L	Fecal Coliform #/100mL	Fecal Strep #/100mL
1	03/11/82 22:30	22.58	1.95	0.002<T	8.24	0.0310	0.252	367.	203.00	200U72	1900U72
2	04/11/82 02:00	23.41	2.11	0.002<T	7.90	0.0260	0.262	331.	190.00	700U72	2200U72
3	04/11/82 07:50	32.40	2.19	0.002<T	8.08	0.0280	0.260	306.	190.00	600U72	1800U72
4	04/11/82 13:45	35.82	2.58	0.002<T	8.27	0.0410	0.390	294.	287.00	400U72	1800U72
5	04/11/82 20:00	45.81	2.21	0.002<T	8.26	0.0530	0.525	332.	399.00	700U72	2100U72
6	04/11/82 22:00	45.81	1.87	0.006	8.30	0.0640	0.425	311.	421.00	400U72	1700U72
7	05/11/82 06:45	42.01	1.74	0.016	8.16	0.0590	0.375	331.	268.00	200<=>	1400
8	05/11/82 20:00	30.04	1.51	0.006	8.46	0.0550	0.315	0.!LA	0.00!LA	1000	3200
	Minimum :	22.58	1.51	0.002	7.90	0.0260	0.252	294.	190.00	200.	1400.
	Maximum :	45.81	2.58	0.016	8.46	0.0640	0.525	367.	421.00	1000.	3200.
	Mean :	34.74	2.02	0.005	8.21	0.0446	0.351	325.	279.71	456.	1959.

STATION #8 West Humber @ Main Humber

#	Date and Time	FLOW m3/s	BOD5 mg/L O	NH4 mg/L N	pH	Phosphates Filt,react mg/L P	Phosphorus Unf,total mg/L P	Residue Filtra. mg/L	Residue Partic. mg/L	Fecal Coliform #/100mL	Fecal Strep #/100mL
1	03/11/82 17:15	1.91	1.93	0.008	8.29	0.0260	0.172	410.	108.00	200U72	600U72
2	03/11/82 19:15	2.36	1.74	0.006	8.35	0.0250	0.167	418.	100.00	200U72	100U72
3	04/11/82 01:45	3.99	1.86	0.004<T	8.41	0.0300	0.215	351.	118.00	200U72	600U72
4	04/11/82 04:45	4.39	1.85	0.006	8.28	0.0360	0.183	341.	110.00	200U72	400U72
5	04/11/82 06:45	5.13	1.84	0.008	8.10	0.0480	0.225	307.	127.00	400U72	100<
6	04/11/82 15:00	5.70	2.17	0.004<T	8.17	0.0620	0.240	323.	110.00	500U72	200U72
7	05/11/82 10:30	11.43	1.92	0.006	8.25	0.0730	0.270	367.	125.00	800<=>	1000
8	05/11/82 19:00	7.95	1.91	0.006	7.93	0.0850	0.272	353.	108.00	500<=>	1800
	Minimum :	1.91	1.74	0.004	7.93	0.0250	0.167	307.	100.00	200.	100.
	Maximum :	11.43	2.17	0.008	8.41	0.0850	0.272	418.	127.00	800.	1800.
	Mean :	5.36	1.90	0.006	8.22	0.0481	0.218	359.	113.25	326.	388.

STATION #9 Main Humber @ West Humber

# Date and Time	FLOW m3/s	BOD5 mg/L O	NH4 mg/L N	pH	Phosphates Filt,react mg/L P	Phosphorus Unf,total mg/L P	Residue Filtra. mg/L	Residue Partic. mg/L	Fecal Coliform #/100mL	Fecal Strep #/100mL
1 03/11/82 17:00	12.19	1.68	0.008	8.31	0.0400	0.310	352.	168.00	100U72	700U72
2 03/11/82 23:30	13.20	2.18	0.016	8.22	0.0320	0.365	357.	158.00	200U72	1400U72
3 04/11/82 02:00	13.77	1.25	0.006	8.35	0.0890	0.397	320.	216.00	600U72	2000U72
4 04/11/82 05:00	15.93	1.56	0.006	8.32	0.0390	0.290	311.	180.00	100U72	600U72
5 04/11/82 08:00	18.47	1.18	0.006	8.55	0.0960	0.310	308.	278.00	400U72	900U72
6 04/11/82 18:00	26.93	1.74	0.006	8.34	0.0630	0.395	332.	394.00	300U72	900U72
7 05/11/82 02:00	29.47	1.71	0.004<T	8.29	0.0500	0.385	333.	287.00	300<=>	800<=>
8 05/11/82 18:45	17.54	1.22	0.004	8.41	0.0380	0.217	364.	173.00	100<	2400
Minimum :	12.19	1.18	0.004	8.22	0.0320	0.217	308.	158.00	100.	600.
Maximum :	29.47	2.18	0.016	8.55	0.0960	0.397	364.	394.00	600.	2400.
Mean :	18.44	1.57	0.007	8.35	0.0559	0.334	335.	231.75	214.	1078.

STATION #10 Humber River @ Steeles Ave.

# Date and Time	FLOW m3/s	BOD5 mg/L O	NH4 mg/L N	pH	Phosphates Filt,react mg/L P	Phosphorus Unf,total mg/L P	Residue Filtra. mg/L	Residue Partic. mg/L	Fecal Coliform #/100mL	Fecal Strep #/100mL
1 03/11/82 16:00	12.94	1.58	0.004<T	8.32	0.0360	0.290	339.	243.00	600U72	600U72
2 04/11/82 01:00	11.60	1.45	0.004<T	8.38	0.0320	0.222	332.	227.00	100U72	800U72
3 04/11/82 04:10	12.11	1.27	0.004<T	8.27	0.0340	0.227	336.	186.00	100U72	900U72
4 04/11/82 06:20	13.58	1.34	0.004<T	8.23	0.0380	0.257	338.	189.00	500U72	1100U72
5 04/11/82 13:30	19.04	1.52	0.008	8.16	0.0520	0.367	336.	226.00	200U72	900U72
6 04/11/82 17:50	21.25	1.68	0.006	8.28	0.0560	0.415	330.	285.00	300U72	800U72
7 04/11/82 22:10	21.38	1.53	0.004<T	8.31	0.0580	0.345	350.	272.00	400U72	300U72
8 05/11/82 18:00	14.12	1.28	0.006	8.29	0.0340	0.215	351.	160.00	500<=>	1400
Minimum :	11.60	1.27	0.004	8.16	0.0320	0.215	330.	160.00	100.	300.
Maximum :	21.38	1.68	0.008	8.38	0.0580	0.415	351.	285.00	600.	1400.
Mean :	15.75	1.46	0.005	8.28	0.0425	0.292	339.	223.50	278.	785.

STATION #11 Black Creek @ Lawrence Ave.

# Date and Time	FLOW m3/s	BOD5 mg/L O	NH4 mg/L N	pH	Phosphates Filt,react mg/L P	Phosphorus Unf,total mg/L P	Residue Filtra. mg/L	Residue Partic. mg/L	Fecal Coliform #/100mL	Fecal Strep #/100mL
1 03/11/82 15:30	0.96	1.66	0.010	8.19	0.0590	0.167	207.	55.60	500U72	1000U72
2 03/11/82 22:00	1.20	3.01	0.016	8.17	0.0390	0.295	359.	56.10	100U72	2000U72
3 03/11/82 23:33	2.44	6.60	0.012	7.75	0.0360	0.217	265.	97.10	1000U72	3800U72
4 04/11/82 00:30	2.63	1.08	0.010	7.91	0.0430	0.202	255.	83.80	700U72	2400U72
5 04/11/82 04:25	2.93	1.42	0.008	8.22	0.0410	0.150	226.	80.10	400U72	500U72
6 04/11/82 11:15	4.44	1.80	0.004<T	8.28	0.0590	0.247	236.	116.00	500U72	900U72
7 04/11/82 14:30	3.59	2.15	0.010	8.12	0.0590	0.227	312.	99.70	700U72	1100U72
8 04/11/82 17:45	3.14	1.76	0.008	8.18	0.0630	0.215	309.	75.30	400U72	1200U72
Minimum :	0.96	1.08	0.004	7.75	0.0360	0.150	207.	55.60	100.	500.
Maximum :	4.44	6.60	0.016	8.28	0.0630	0.295	359.	116.00	1000.	3800.
Mean :	2.67	2.44	0.010	8.10	0.0499	0.215	271.	82.96	459.	1347.

TORONTO AREA WATERSHED MANAGEMENT STUDY
WATER QUALITY DATA
WET EVENT 2 - NOVEMBER 3 TO NOVEMBER 5, 1982

Inorganic Parameters (Metals)

STATION #1 Taylor Creek

# Date and Time	FLOW m3/s	Cadmium mg/L Cd	Chromium mg/L Cr	Copper mg/L Cu	Mercury ug/L Hg	Nickel mg/L Ni	Lead mg/L Pb	Zinc mg/L Zn
1 03/11/82 16:00	0.32	0.0002	0.006	0.019	0.040<	0.010	0.023	0.040
3 03/11/82 18:00	0.40	0.0004	0.004	0.018	0.040<	0.004	0.037	0.048
5 03/11/82 21:00	0.74	0.0004	0.006	0.023	0.040<	0.005	0.076	0.068
7 04/11/82 01:00	2.04	0.0007	0.011	0.037	0.040	0.008	0.087	0.120
Minimum :	0.32	0.0002	0.004	0.018	0.040	0.004	0.023	0.040
Maximum :	2.04	0.0007	0.011	0.037	0.040	0.010	0.087	0.120
Mean :	1.01	0.0004	0.007	0.024	0.040	0.007	0.056	0.069

STATION #2 Don River @ Front St.

# Date and Time	FLOW m3/s	Cadmium mg/L Cd	Chromium mg/L Cr	Copper mg/L Cu	Mercury ug/L Hg	Nickel mg/L Ni	Lead mg/L Pb	Zinc mg/L Zn
1 03/11/82 19:30	9.22	0.0006	0.010	0.018	0.040	0.008	0.031	0.065
3 04/11/82 02:00	25.20	0.0007	0.010	0.023	0.050	0.008	0.031	0.085
6 04/11/82 08:00	21.70	0.0006	0.008	0.024	0.040	0.007	0.058	0.077
Minimum :	9.22	0.0006	0.008	0.018	0.040	0.007	0.031	0.065
Maximum :	25.41	0.0007	0.010	0.024	0.050	0.008	0.058	0.085
Mean :	20.25	0.0006	0.009	0.022	0.043	0.008	0.040	0.076

STATION #3 Humber River @ Bloor St.

# Date and Time	FLOW m3/s	Cadmium mg/L Cd	Chromium mg/L Cr	Copper mg/L Cu	Mercury ug/L Hg	Nickel mg/L Ni	Lead mg/L Pb	Zinc mg/L Zn
1 03/11/82 19:00	15.34	0.0005	0.011	0.017	0.040<	0.008	0.023	0.048
3 04/11/82 01:00	23.35	0.0005	0.010	0.022	0.040<	0.007	0.033	0.054
6 05/11/82 07:00	37.39	0.0005	0.010	0.016	0.040<	0.008	0.020	0.042
8 05/11/82 20:45	38.77	0.0004	0.008	0.130	0.040<	0.006	0.013	0.027
Minimum :	15.34	0.0004	0.008	0.016	0.040	0.006	0.013	0.027
Maximum :	38.77	0.0005	0.011	0.130	0.040	0.008	0.033	0.054
Mean :	28.35	0.0005	0.010	0.046	0.040	0.007	0.022	0.043

STATION #4 Mimico Creek @ QEW Offramp

# Date and Time	FLOW m3/s	Cadmium mg/L Cd	Chromium mg/L Cr	Copper mg/L Cu	Mercury ug/L Hg	Nickel mg/L Ni	Lead mg/L Pb	Zinc mg/L Zn
1 03/11/82 15:10	2.91	0.0005	0.022	0.017	0.040<	0.006	0.019	0.055
4 03/11/82 22:20	3.39	0.0004	0.017	0.017	0.040<	0.003	0.028	0.060
6 04/11/82 01:30	5.46	0.0010AIN	0.033AIN	0.037AIN	0.040	0.016AIN	0.062AIN	0.130AIN
8 05/11/82 02:30	6.09	0.0005	0.014	0.015	0.040<	0.006	0.024	0.058
Minimum :	2.45	0.0004	0.014	0.015	0.040	0.003	0.019	0.055
Maximum :	9.71	0.0010	0.033	0.037	0.040	0.016	0.062	0.130
Mean :	4.66	0.0006	0.022	0.022	0.040	0.008	0.033	0.076

STATION #5 Black Creek @ Scarlett Rd.

# Date and Time	FLOW m3/s	Cadmium mg/L Cd	Chromium mg/L Cr	Copper mg/L Cu	Mercury ug/L Hg	Nickel mg/L Ni	Lead mg/L Pb	Zinc mg/L Zn
3 04/11/82 00:50	6.17	0.0006	0.011	0.021	0.040	0.008	0.075	0.082
5 04/11/82 08:00	6.97	0.0004	0.009	0.013	0.050	0.006	0.033	0.050
8 04/11/82 18:00	4.94	0.0006	0.010	0.016	0.040	0.006	0.046	0.058
Minimum :	1.41	0.0004	0.009	0.013	0.040	0.006	0.033	0.050
Maximum :	6.97	0.0006	0.011	0.021	0.050	0.008	0.075	0.082
Mean :	5.49	0.0005	0.010	0.017	0.043	0.007	0.051	0.063

STATION #6 Humber River @ Scarlett Rd.

# Date and Time	FLOW m3/s	Cadmium mg/L Cd	Chromium mg/L Cr	Copper mg/L Cu	Mercury ug/L Hg	Nickel mg/L Ni	Lead mg/L Pb	Zinc mg/L Zn
1 03/11/82 19:15	19.44	0.0003	0.008	0.013	0.040<	0.006	0.013	0.034
3 03/11/82 23:30	21.72	0.0004	0.009	0.014	0.040<	0.006	0.021	0.038
5 04/11/82 03:00	24.53	0.0004	0.012	0.014	0.040<	0.007	0.020	0.048
8 05/11/82 20:30	28.02	0.0002	0.006	0.013	0.040<	0.005	0.008	0.024
Minimum :	19.44	0.0002	0.006	0.013	0.040	0.005	0.008	0.024
Maximum :	43.75	0.0004	0.012	0.014	0.040	0.007	0.021	0.048
Mean :	26.02	0.0003	0.009	0.014	0.040	0.006	0.016	0.036

STATION #7 Humber River @ Lawrence Ave.

# Date and Time	FLOW m3/s	Cadmium mg/L Cd	Chromium mg/L Cr	Copper mg/L Cu	Mercury ug/L Hg	Nickel mg/L Ni	Lead mg/L Pb	Zinc mg/L Zn
3 04/11/82 07:50	32.40	0.0002<	0.010	0.019	0.040<	0.010	0.014	0.070
5 04/11/82 20:00	45.81	0.0006AIN	0.016AIN	0.022AIN	0.040<	0.010AIN	0.019AIN	0.051AIN
7 05/11/82 06:45	42.01	0.0004	0.010	0.018	0.040<	0.008	0.014	0.038
8 05/11/82 20:00	30.04	0.0003	0.006	0.011	0.040<	0.005	0.008	0.030
Minimum :	22.58	0.0002	0.006	0.011	0.040	0.005	0.008	0.030
Maximum :	45.81	0.0006	0.016	0.022	0.040	0.010	0.019	0.070
Mean :	34.74	0.0004	0.011	0.018	0.040	0.008	0.014	0.047

STATION #8 West Humber @ Main Humber

# Date and Time	FLOW m3/s	Cadmium mg/L Cd	Chromium mg/L Cr	Copper mg/L Cu	Mercury ug/L Hg	Nickel mg/L Ni	Lead mg/L Pb	Zinc mg/L Zn
1 03/11/82 17:15	1.91	0.0002	0.006	0.012	0.040<	0.004	0.013	0.020
4 04/11/82 04:45	4.39	0.0003	0.008	0.013	0.040<	0.006	0.019	0.035
7 05/11/82 10:30	11.43	0.0003	0.007	0.014	0.040<	0.006	0.007	0.037
8 05/11/82 19:00	7.95	0.0002	0.006	0.016	0.040<	0.005	0.010	0.026
Minimum :	1.91	0.0002	0.006	0.012	0.040	0.004	0.007	0.020
Maximum :	11.43	0.0003	0.008	0.016	0.040	0.006	0.019	0.037
Mean :	5.36	0.0003	0.007	0.014	0.040	0.005	0.012	0.030

STATION #9 Main Humber @ West Humber

# Date and Time	FLOW m3/s	Cadmium mg/L Cd	Chromium mg/L Cr	Copper mg/L Cu	Mercury ug/L Hg	Nickel mg/L Ni	Lead mg/L Pb	Zinc mg/L Zn
1 03/11/82 17:00	12.19	0.0003	0.010	0.014	0.040<	0.006	0.010	0.035
4 04/11/82 05:00	15.93	0.0002	0.012	0.014	0.040<	0.006	0.012	0.029
7 05/11/82 02:00	29.47	0.0003	0.008	0.014	0.040<	0.006	0.010	0.034
8 05/11/82 18:45	17.54	0.0002	0.005	0.012	0.030<	0.004	0.005	0.016
Minimum :	12.19	0.0002	0.005	0.012	0.030	0.004	0.005	0.016
Maximum :	29.47	0.0003	0.012	0.014	0.040	0.006	0.012	0.035
Mean :	18.44	0.0003	0.009	0.014	0.037	0.006	0.009	0.029

STATION #10 Humber River @ Steeles Ave.

# Date and Time	FLOW m3/s	Cadmium mg/L Cd	Chromium mg/L Cr	Copper mg/L Cu	Mercury ug/L Hg	Nickel mg/L Ni	Lead mg/L Pb	Zinc mg/L Zn
1 03/11/82 16:00	12.94	0.0002	0.012	0.013	0.030<	0.005	0.007	0.030
3 04/11/82 04:10	12.11	0.0002<	0.005	0.012	0.030<	0.004	0.017	0.031
6 04/11/82 17:50	21.25	0.0004	0.010	0.018	0.030<	0.008	0.012	0.032
8 05/11/82 18:00	14.12	0.0002	0.006	0.013	0.030<	0.004	0.008	0.015
Minimum :	11.60	0.0002	0.005	0.012	0.030	0.004	0.007	0.015
Maximum :	21.38	0.0004	0.012	0.018	0.030	0.008	0.017	0.032
Mean :	15.75	0.0002	0.008	0.014	0.030	0.005	0.011	0.027

STATION #11 Black Creek @ Lawrence Ave.

# Date and Time	FLOW m3/s	Cadmium mg/L Cd	Chromium mg/L Cr	Copper mg/L Cu	Mercury ug/L Hg	Nickel mg/L Ni	Lead mg/L Pb	Zinc mg/L Zn
1 03/11/82 15:30	0.96	0.0002	0.007	0.017	0.030	0.004	0.015	0.044
4 04/11/82 00:30	2.63	0.0004	0.008	0.016	0.060	0.007	0.052	0.073
6 04/11/82 11:15	4.44	0.0004	0.011	0.017	0.070	0.006	0.049	0.075
8 04/11/82 17:45	3.14	0.0003	0.008	0.016	0.040	0.005	0.035	0.050
Minimum :	0.96	0.0002	0.007	0.016	0.030	0.004	0.015	0.044
Maximum :	4.44	0.0004	0.011	0.017	0.070	0.007	0.052	0.075
Mean :	2.67	0.0003	0.009	0.017	0.050	0.006	0.038	0.060

TORONTO AREA WATERSHED MANAGEMENT STUDY
WATER QUALITY DATA
WET EVENT 2 - NOVEMBER 3 TO NOVEMBER 5, 1982

Pesticides and Organic Parameters

STATION #1 Taylor Creek

#	Date and Time	FLOW m3/s	10 ALDR ng/L	11 BHCA ng/L	12 BHCB ng/L	13 BHCG ng/L	14 CHLA ng/L	15 CHLG ng/L	16 DIEL ng/L	17 DMDT ng/L	18 END1 ng/L	19 END2 ng/L	20 ENDR ng/L	21 ENDS ng/L
3	03/11/82 18:00	0.40	1<W	7	1<W	5	2<W	2<W	2<W	5<W	2<W	4<W	4<W	4<W
7	04/11/82 01:00	2.04	1<W	16	1<W	14	2<W	2<W	2<W	5<W	2<W	4<W	4<W	4<W

STATION #2 Don River @ Front St.

#	Date and Time	FLOW m3/s	10 ALDR ng/L	11 BHCA ng/L	12 BHCB ng/L	13 BHCG ng/L	14 CHLA ng/L	15 CHLG ng/L	16 DIEL ng/L	17 DMDT ng/L	18 END1 ng/L	19 END2 ng/L	20 ENDR ng/L	21 ENDS ng/L
3	04/11/82 02:00	25.20	1<W	9	4	1<W	2<W	2<W	2<W	5<W	2<W	4<W	4<W	4<W
6	04/11/82 08:00	21.70	1<W	13	10	7	2<W	2<W	2<W	5<W	2<W	4<W	4<W	4<W

STATION #3 Humber River @ Bloor St.

#	Date and Time	FLOW m3/s	10 ALDR ng/L	11 BHCA ng/L	12 BHCB ng/L	13 BHCG ng/L	14 CHLA ng/L	15 CHLG ng/L	16 DIEL ng/L	17 DMDT ng/L	18 END1 ng/L	19 END2 ng/L	20 ENDR ng/L	21 ENDS ng/L
3	04/11/82 01:00	23.35	1<W	6	5	5	2<W	2<W	2<W	5<W	2<W	4<W	4<W	4<W
6	05/11/82 07:00	37.39	1<W	6	1<W	2	2<W	2	2<W	5<W	2<W	4<W	4<W	4<W

STATION #4 Mimico Creek @ QEW Offramp

#	Date and Time	FLOW m3/s	10 ALDR ng/L	11 BHCA ng/L	12 BHCB ng/L	13 BHCG ng/L	14 CHLA ng/L	15 CHLG ng/L	16 DIEL ng/L	17 DMDT ng/L	18 END1 ng/L	19 END2 ng/L	20 ENDR ng/L	21 ENDS ng/L
4	03/11/82 22:20	3.39	1<W	9	4	5	2<W	2<W	2<W	5<W	2<W	4<W	4<W	4<W
6	04/11/82 01:30	5.46	1<W	12	4	5	2<W	2<W	2<W	5<W	2<W	4<W	4<W	4<W

STATION #5 Black Creek @ Scarlett Rd.

# Date and Time	FLOW m3/s	10 ALDR ng/L	11 BHCA ng/L	12 BHCB ng/L	13 BHCG ng/L	14 CHLA ng/L	15 CHLG ng/L	16 DIEL ng/L	17 DMDT ng/L	18 END1 ng/L	19 END2 ng/L	20 ENDR ng/L	21 ENDS ng/L
3 04/11/82 00:50	6.17	1<W	12	5	5	2<W	2<W	2<W	5<W	2<W	4<W	4<W	4<W
5 04/11/82 08:00	6.97	1<W	13	4	5	2<W	2<W	2<W	5<W	2<W	4<W	4<W	4<W

STATION #6 Humber River @ Scarlett Rd.

# Date and Time	FLOW m3/s	10 ALDR ng/L	11 BHCA ng/L	12 BHCB ng/L	13 BHCG ng/L	14 CHLA ng/L	15 CHLG ng/L	16 DIEL ng/L	17 DMDT ng/L	18 END1 ng/L	19 END2 ng/L	20 ENDR ng/L	21 ENDS ng/L
3 03/11/82 23:30	21.72	1<W	7	5	2	2<W	2<W	2<W	5<W	2<W	4<W	4<W	4<W
5 04/11/82 03:00	24.53	1<W	9	3	4	2<W	2<W	2<W	5<W	2<W	4<W	4<W	4<W

STATION #7 Humber River @ Lawrence Ave.

# Date and Time	FLOW m3/s	10 ALDR ng/L	11 BHCA ng/L	12 BHCB ng/L	13 BHCG ng/L	14 CHLA ng/L	15 CHLG ng/L	16 DIEL ng/L	17 DMDT ng/L	18 END1 ng/L	19 END2 ng/L	20 ENDR ng/L	21 ENDS ng/L
3 04/11/82 07:50	32.40	1<W	8	6	2	2<W	2<W	2<W	5<W	2<W	4<W	4<W	4<W
5 04/11/82 20:00	45.81	1<W	8	1<W	8	2<W	2<W	2<W	5<W	2<W	4<W	4<W	4<W

STATION #8 West Humber @ Main Humber

# Date and Time	FLOW m3/s	10 ALDR ng/L	11 BHCA ng/L	12 BHCB ng/L	13 BHCG ng/L	14 CHLA ng/L	15 CHLG ng/L	16 DIEL ng/L	17 DMDT ng/L	18 END1 ng/L	19 END2 ng/L	20 ENDR ng/L	21 ENDS ng/L
4 04/11/82 04:45	4.39	1<W	8	1<W	2	2<W	2<W	2<W	5<W	2<W	4<W	4<W	4<W
7 05/11/82 10:30	11.43	1<W	5	1<W	4	2<W	2<W	2<W	5<W	2<W	4<W	4<W	4<W

STATION #9 Main Humber @ West Humber

# Date and Time	FLOW m3/s	10 ALDR ng/L	11 BHCA ng/L	12 BHCB ng/L	13 BHCG ng/L	14 CHLA ng/L	15 CHLG ng/L	16 DIEL ng/L	17 DMDT ng/L	18 END1 ng/L	19 END2 ng/L	20 ENDR ng/L	21 ENDS ng/L
4 04/11/82 05:00	15.93	1<W	9	4	10	2<W	2<W	2<W	5<W	2<W	4<W	4<W	4<W
7 05/11/82 02:00	29.47	1<W	6	1<W	1<W	2<W	2<W	2<W	5<W	2<W	4<W	4<W	4<W

STATION #10 Humber River @ Steeles Ave.

#	Date and Time	FLOW m3/s	10 ALDR ng/L	11 BHCA ng/L	12 BHCB ng/L	13 BHCG ng/L	14 CHLA ng/L	15 CHLG ng/L	16 DIEL ng/L	17 DMDT ng/L	18 END1 ng/L	19 END2 ng/L	20 ENDR ng/L	21 ENDS ng/L
3	04/11/82 04:10	12.11	1<W	5	1<W	8	2<W	2<W	2<W	5<W	2<W	4<W	4<W	4<W
6	04/11/82 17:50	21.25	1<W	1<W	1<W	1<W	2<W	2<W	2<W	5<W	2<W	4<W	4<W	4<W

STATION #11 Black Creek @ Lawrence Ave.

#	Date and Time	FLOW m3/s	10 ALDR ng/L	11 BHCA ng/L	12 BHCB ng/L	13 BHCG ng/L	14 CHLA ng/L	15 CHLG ng/L	16 DIEL ng/L	17 DMDT ng/L	18 END1 ng/L	19 END2 ng/L	20 ENDR ng/L	21 ENDS ng/L
4	04/11/82 00:30	2.63	1<W	6	1<W	8	2<W	2<W	2<W	5<W	2<W	4<W	4<W	4<W
6	04/11/82 11:15	4.44	1<W	12	1<W	15	2	4	2<W	5<W	2<W	4<W	4<W	4<W

TORONTO AREA WATERSHED MANAGEMENT STUDY
WATER QUALITY DATA
WET EVENT 2 - NOVEMBER 3 TO NOVEMBER 5, 1982

Pesticides and Organic Parameters

STATION #1 Taylor Creek

# Date and Time	FLOW m3/s	22 HEPE ng/L	23 HEPT ng/L	24 MIRX ng/L	25 OCHL ng/L	26 OPDT ng/L	27 PCBT ng/L	28 PPDD ng/L	29 PPDE ng/L	30 PPDT ng/L	31 245T ng/L	32 24D ng/L	33 24DB ng/L
3 03/11/82 18:00	0.40	1<W	1<W	5<W	2<W	5<W	0!CS	5<W	1<W	5<W	50<W	270	200<W
7 04/11/82 01:00	2.04	1<W	1<W	5<W	2<W	5<W	390P54	5<W	1<W	5<W	50<W	200	200<W

STATION #2 Don River @ Front St.

# Date and Time	FLOW m3/s	22 HEPE ng/L	23 HEPT ng/L	24 MIRX ng/L	25 OCHL ng/L	26 OPDT ng/L	27 PCBT ng/L	28 PPDD ng/L	29 PPDE ng/L	30 PPDT ng/L	31 245T ng/L	32 24D ng/L	33 24DB ng/L
3 04/11/82 02:00	25.20	1<W	1<W	5<W	2<W	5<W	90P54	5<W	1<W	5<W	50<W	380	200<W
6 04/11/82 08:00	21.70	1<W	1<W	5<W	2<W	5<W	110P54	5<W	1<W	5<W	50<W	0!RP	200<W

STATION #3 Humber River @ Bloor St.

# Date and Time	FLOW m3/s	22 HEPE ng/L	23 HEPT ng/L	24 MIRX ng/L	25 OCHL ng/L	26 OPDT ng/L	27 PCBT ng/L	28 PPDD ng/L	29 PPDE ng/L	30 PPDT ng/L	31 245T ng/L	32 24D ng/L	33 24DB ng/L
3 04/11/82 01:00	23.35	1<W	1<W	5<W	2<W	5<W	0!CS	5<W	1<W	5<W	50<W	350	200<W
6 05/11/82 07:00	37.39	1<W	1<W	5<W	2<W	5<W	20<W	5<W	1<W	5<W	50<W	100<W	200<W

STATION #4 Mimico Creek @ QEW Offramp

# Date and Time	FLOW m3/s	22 HEPE ng/L	23 HEPT ng/L	24 MIRX ng/L	25 OCHL ng/L	26 OPDT ng/L	27 PCBT ng/L	28 PPDD ng/L	29 PPDE ng/L	30 PPDT ng/L	31 245T ng/L	32 24D ng/L	33 24DB ng/L
4 03/11/82 22:20	3.39	1<W	1<W	5<W	2<W	5<W	0!CS	5<W	1<W	5<W	50<W	100<W	200<W
6 04/11/82 01:30	5.46	1<W	1<W	5<W	2<W	5<W	0!CS	5<W	2	5<W	50<W	190	200<W

STATION #5 Black Creek @ Scarlett Rd.

# Date and Time	FLOW m3/s	22 HEPE ng/L	23 HEPT ng/L	24 MIRX ng/L	25 OCHL ng/L	26 OPDT ng/L	27 PCBT ng/L	28 PPDD ng/L	29 PPDE ng/L	30 PPDT ng/L	31 245T ng/L	32 24D ng/L	33 24DB ng/L
3 04/11/82 00:50	6.17	1<W	1<W	5<W	2<W	5<W	0!CS	5<W	1<W	5<W	50<W	100<W	200<W
5 04/11/82 08:00	6.97	1<W	1<W	5<W	2<W	5<W	0!CS	5<W	1<W	5<W	50<W	100<W	200<W

STATION #6 Humber River @ Scarlett Rd.

# Date and Time	FLOW m3/s	22 HEPE ng/L	23 HEPT ng/L	24 MIRX ng/L	25 OCHL ng/L	26 OPDT ng/L	27 PCBT ng/L	28 PPDD ng/L	29 PPDE ng/L	30 PPDT ng/L	31 245T ng/L	32 24D ng/L	33 24DB ng/L
3 03/11/82 23:30	21.72	1<W	1<W	5<W	2<W	5<W	0!CS	5<W	1<W	5<W	50<W	100<W	200<W
5 04/11/82 03:00	24.53	1<W	1<W	5<W	2<W	5<W	0!CS	5<W	1<W	5<W	50<W	320	200<W

STATION #7 Humber River @ Lawrence Ave.

# Date and Time	FLOW m3/s	22 HEPE ng/L	23 HEPT ng/L	24 MIRX ng/L	25 OCHL ng/L	26 OPDT ng/L	27 PCBT ng/L	28 PPDD ng/L	29 PPDE ng/L	30 PPDT ng/L	31 245T ng/L	32 24D ng/L	33 24DB ng/L
3 04/11/82 07:50	32.40	1<W	1<W	5<W	2<W	5<W	0!CS	5<W	1<W	5<W	50<W	340	200<W
5 04/11/82 20:00	45.81	1<W	1<W	5<W	2<W	5<W	0!CS	5<W	1<W	5<W	50<W	250	200<W

STATION #8 West Humber @ Main Humber

# Date and Time	FLOW m3/s	22 HEPE ng/L	23 HEPT ng/L	24 MIRX ng/L	25 OCHL ng/L	26 OPDT ng/L	27 PCBT ng/L	28 PPDD ng/L	29 PPDE ng/L	30 PPDT ng/L	31 245T ng/L	32 24D ng/L	33 24DB ng/L
4 04/11/82 04:45	4.39	1<W	1<W	5<W	2<W	5<W	20<W	5<W	1<W	5<W	50<W	680	200<W
7 05/11/82 10:30	11.43	1<W	1<W	5<W	2<W	5<W	20<W	5<W	1<W	5<W	50<W	220	200<W

STATION #9 Main Humber @ West Humber

# Date and Time	FLOW m3/s	22 HEPE ng/L	23 HEPT ng/L	24 MIRX ng/L	25 OCHL ng/L	26 OPDT ng/L	27 PCBT ng/L	28 PPDD ng/L	29 PPDE ng/L	30 PPDT ng/L	31 245T ng/L	32 24D ng/L	33 24DB ng/L
4 04/11/82 05:00	15.93	1<W	1<W	5<W	2<W	5<W	20<W	5<W	1<W	5<W	50<W	220	200<W
7 05/11/82 02:00	29.47	1<W	1<W	5<W	2<W	5<W	20<W	5<W	1<W	5<W	50<W	100<W	200<W

STATION #10 Humber River @ Steeles Ave.

# Date and Time	FLOW m3/s	22 HEPE ng/L	23 HEPT ng/L	24 MIRX ng/L	25 OCHL ng/L	26 OPDT ng/L	27 PCBT ng/L	28 PPDD ng/L	29 PPDE ng/L	30 PPDT ng/L	31 245T ng/L	32 24D ng/L	33 24DB ng/L
3 04/11/82 04:10	12.11	1<W	1<W	5<W	2<W	5<W	20<W	5<W	1<W	5<W	50<W	100<W	200<W
6 04/11/82 17:50	21.25	1<W	1<W	5<W	2<W	5<W	20<W	5<W	1<W	5<W	50<W	100<W	200<W

STATION #11 Black Creek @ Lawrence Ave.

# Date and Time	FLOW m3/s	22 HEPE ng/L	23 HEPT ng/L	24 MIRX ng/L	25 OCHL ng/L	26 OPDT ng/L	27 PCBT ng/L	28 PPDD ng/L	29 PPDE ng/L	30 PPDT ng/L	31 245T ng/L	32 24D ng/L	33 24DB ng/L
4 04/11/82 00:30	2.63	1<W	1<W	5<W	2<W	5<W	20<W	5<W	1<W	5<W	50<W	440	200<W
6 04/11/82 11:15	4.44	1<W	1	5<W	2<W	5<W	0!CS	5<W	1<W	5<W	50<W	230	200<W

TORONTO AREA WATERSHED MANAGEMENT STUDY
WATER QUALITY DATA
WET EVENT 2 - NOVEMBER 3 TO NOVEMBER 5, 1982

Pesticides and Organic Parameters

STATION #1 Taylor Creek

#	Date and Time	FLOW m3/s	34 24DP ng/L	35 DICA ng/L	36 PICL ng/L	37 SILV ng/L	38 HCB ng/L	39 234 ng/L	40 2345 ng/L	41 2356 ng/L	42 245 ng/L	43 246 ng/L	44 PCPH ng/L
3	03/11/82 18:00	0.40	100<W	100<W	100<W	50<W	2	100<W	50<W	50<W	50<W	50<W	70
7	04/11/82 01:00	2.04	100<W	100<W	100<W	80	3	100<W	50<W	50<W	50<W	50<W	50<W

STATION #2 Don River @ Front St.

#	Date and Time	FLOW m3/s	34 24DP ng/L	35 DICA ng/L	36 PICL ng/L	37 SILV ng/L	38 HCB ng/L	39 234 ng/L	40 2345 ng/L	41 2356 ng/L	42 245 ng/L	43 246 ng/L	44 PCPH ng/L
3	04/11/82 02:00	25.20	100<W	100<W	100<W	170	2	100<W	50<W	50<W	50<W	50<W	50<W
6	04/11/82 08:00	21.70	100<W	100<W	100<W	50<W	2	100<W	50<W	50<W	50<W	50<W	50<W

STATION #3 Humber River @ Bloor St.

#	Date and Time	FLOW m3/s	34 24DP ng/L	35 DICA ng/L	36 PICL ng/L	37 SILV ng/L	38 HCB ng/L	39 234 ng/L	40 2345 ng/L	41 2356 ng/L	42 245 ng/L	43 246 ng/L	44 PCPH ng/L
3	04/11/82 01:00	23.35	100<W	100<W	100<W	50<W	1<W	100<W	50<W	50<W	50<W	50<W	50<W
6	05/11/82 07:00	37.39	100<W	100<W	100<W	70	1<W	100<W	50<W	50<W	50<W	50<W	50<W

STATION #4 Mimico Creek @ QEW Offramp

#	Date and Time	FLOW m3/s	34 24DP ng/L	35 DICA ng/L	36 PICL ng/L	37 SILV ng/L	38 HCB ng/L	39 234 ng/L	40 2345 ng/L	41 2356 ng/L	42 245 ng/L	43 246 ng/L	44 PCPH ng/L
4	03/11/82 22:20	3.39	100<W	100<W	100<W	50<W	1<W	100<W	50<W	50<W	50<W	50<W	50<W
6	04/11/82 01:30	5.46	100<W	100<W	100<W	50<W	1<W	100<W	50<W	50<W	50<W	50<W	340

STATION #5 Black Creek @ Scarlett Rd.

#	Date and Time	FLOW m3/s	34 24DP ng/L	35 DICA ng/L	36 PICL ng/L	37 SILV ng/L	38 HCB ng/L	39 234 ng/L	40 2345 ng/L	41 2356 ng/L	42 245 ng/L	43 246 ng/L	44 PCPH ng/L
3	04/11/82 00:50	6.17	100<W	100<W	100<W	50<W	1<W	100<W	50<W	50<W	50<W	50<W	530
5	04/11/82 08:00	6.97	100<W	100<W	100<W	70	1<W	100<W	50<W	50<W	50<W	50<W	210

STATION #6 Humber River @ Scarlett Rd.

#	Date and Time	FLOW m3/s	34 24DP ng/L	35 DICA ng/L	36 PICL ng/L	37 SILV ng/L	38 HCB ng/L	39 234 ng/L	40 2345 ng/L	41 2356 ng/L	42 245 ng/L	43 246 ng/L	44 PCPH ng/L
3	03/11/82 23:30	21.72	100<W	100<W	100<W	50<W	1<W	100<W	50<W	50<W	50<W	50<W	50<W
5	04/11/82 03:00	24.53	100<W	100<W	100<W	50<W	1<W	100<W	50<W	50<W	50<W	50<W	100

STATION #7 Humber River @ Lawrence Ave.

#	Date and Time	FLOW m3/s	34 24DP ng/L	35 DICA ng/L	36 PICL ng/L	37 SILV ng/L	38 HCB ng/L	39 234 ng/L	40 2345 ng/L	41 2356 ng/L	42 245 ng/L	43 246 ng/L	44 PCPH ng/L
3	04/11/82 07:50	32.40	100<W	100<W	100<W	50<W	1<W	100<W	50<W	50<W	50<W	50<W	80
5	04/11/82 20:00	45.81	100<W	100<W	100<W	50<W	1<W	100<W	50<W	50<W	50<W	50<W	50

STATION #8 West Humber @ Main Humber

#	Date and Time	FLOW m3/s	34 24DP ng/L	35 DICA ng/L	36 PICL ng/L	37 SILV ng/L	38 HCB ng/L	39 234 ng/L	40 2345 ng/L	41 2356 ng/L	42 245 ng/L	43 246 ng/L	44 PCPH ng/L
4	04/11/82 04:45	4.39	100<W	120	100<W	50<W	1<W	100<W	50<W	50<W	50<W	50<W	50<W
7	05/11/82 10:30	11.43	100<W	100<W	100<W	50<W	1<W	100<W	50<W	50<W	50<W	50<W	50<W

STATION #9 Main Humber @ West Humber

#	Date and Time	FLOW m3/s	34 24DP ng/L	35 DICA ng/L	36 PICL ng/L	37 SILV ng/L	38 HCB ng/L	39 234 ng/L	40 2345 ng/L	41 2356 ng/L	42 245 ng/L	43 246 ng/L	44 PCPH ng/L
4	04/11/82 05:00	15.93	100<W	100<W	100<W	50<W	1<W	100<W	50<W	50<W	50<W	50<W	80
7	05/11/82 02:00	29.47	100<W	100<W	100<W	50<W	1<W	100<W	50<W	50<W	50<W	50<W	50<W

STATION #10 Humber River @ Steeles Ave.

#	Date and Time	FLOW m3/s	34 24DP ng/L	35 DICA ng/L	36 PICL ng/L	37 SILV ng/L	38 HCB ng/L	39 234 ng/L	40 2345 ng/L	41 2356 ng/L	42 245 ng/L	43 246 ng/L	44 PCPH ng/L
3	04/11/82 04:10	12.11	100<W	100<W	100<W	50<W	1<W	100<W	50<W	50<W	50<W	50<W	50<W
6	04/11/82 17:50	21.25	100<W	100<W	100<W	50<W	1<W	100<W	50<W	50<W	50<W	50<W	50<W

STATION #11 Black Creek @ Lawrence Ave.

#	Date and Time	FLOW m3/s	34 24DP ng/L	35 DICA ng/L	36 PICL ng/L	37 SILV ng/L	38 HCB ng/L	39 234 ng/L	40 2345 ng/L	41 2356 ng/L	42 245 ng/L	43 246 ng/L	44 PCPH ng/L
4	04/11/82 00:30	2.63	310	120	100<W	50	1<W	100<W	50<W	50<W	50<W	50<W	50<W
6	04/11/82 11:15	4.44	100<W	100<W	100<W	50<W	2	100<W	50<W	50<W	50<W	50<W	50<W

TORONTO AREA WATERSHED MANAGEMENT STUDY
WATER QUALITY DATA
WET EVENT 3 - NOVEMBER 21 TO NOVEMBER 22, 1982

Conventional Water Quality Parameters and Bacteria

STATION #1 Taylor Creek

#	Date and Time	FLOW m3/s	BOD5 mg/L O	NH4 mg/L N	pH	Phosphates Filt,react mg/L P	Phosphorus Unf,total mg/L P	Residue Filtra. mg/L	Residue Partic. mg/L	Fecal Coliform #/100mL	Fecal Strep #/100mL
1	21/11/82 13:05	1.35	3.34	0.004<T	7.45	0.1250	0.425	246.	108.00	230000	31000
2	21/11/82 13:55	1.50	2.86	0.010	7.87	0.0570	0.257	230.	59.80	13300	7900
3	21/11/82 16:30	0.97	2.52	0.006	7.80	0.0540	0.177	248.	57.90	13400	3500
4	21/11/82 18:40	0.60	2.26	0.004<T	7.96	0.0415	0.117	250.	26.60	7400	4900
5	21/11/82 20:29	0.53	1.53	0.006	7.84	0.0425	0.100	277.	18.20	5700	4100
6	21/11/82 22:33	0.46	1.60	0.002<T	7.11	0.0440	0.087	374.	10.60	4300	3700
	Minimum :	0.46	1.53	0.002	7.11	0.0415	0.087	230.	10.60	4300.	3500.
	Maximum :	1.50	3.34	0.010	7.96	0.1250	0.425	374.	108.00	230000.	31000.
	Mean :	0.90	2.35	0.005	7.67	0.0607	0.194	271.	46.85	13970.	6320.

STATION #2 Don River @ Front St.

#	Date and Time	FLOW m3/s	BOD5 mg/L O	NH4 mg/L N	pH	Phosphates Filt,react mg/L P	Phosphorus Unf,total mg/L P	Residue Filtra. mg/L	Residue Partic. mg/L	Fecal Coliform #/100mL	Fecal Strep #/100mL
1	21/11/82 12:04	13.41	5.88	0.004<T	7.94	0.0785	0.655	284.	302.00	39000	21000
2	21/11/82 14:11	10.81	8.20	0.004<T	7.65	0.1250	0.555	281.	217.00	190000	32000
3	21/11/82 16:50	9.50	5.54	0.010	7.98	0.0715	0.405	257.	209.00	25000	15000
4	21/11/82 19:10	8.35	5.72	0.006	8.03	0.0680	0.335	243.	149.00	11800	9500
5	21/11/82 23:43	5.95	3.04	0.004<T	8.18	0.0690	0.300	345.	141.00	7900	4400
	Minimum :	5.95	3.04	0.004	7.65	0.0680	0.300	243.	141.00	7900.	4400.
	Maximum :	13.41	8.20	0.010	8.18	0.1250	0.655	345.	302.00	190000.	32000.
	Mean :	9.60	5.68	0.006	7.96	0.0824	0.450	282.	203.60	28019.	13333.

STATION #3 Humber River @ Bloor St.

#	Date and Time	FLOW m3/s	BOD5 mg/L O	NH4 mg/L N	pH	Phosphates Filt,react mg/L P	Phosphorus Unf,total mg/L P	Residue Filtra. mg/L	Residue Partic. mg/L	Fecal Coliform #/100mL	Fecal Strep #/100mL
1	21/11/82 18:45	9.11	1.94	0.002<T	8.33	0.0250	0.132	305.	60.30	3500	3100
2	22/11/82 02:30	11.10	1.56	0.006	8.40	0.0010<W	0.148	402.	51.60	1240	1220
3	22/11/82 04:15	13.16	1.74	0.004<T	8.50	0.0025<T	0.165	447.	28.90	1240	1060
4	22/11/82 06:00	13.83	2.61	0.006	8.39	0.0020<T	0.207	462.	56.90	940	1140
5	22/11/82 11:30	13.96	2.25	0.006	8.30	0.0050	0.217	469.	127.00	880	1340
6	22/11/82 14:00	13.43	1.63	0.006	8.48	0.0030	0.160	486.	15.40	920	860
7	22/11/82 16:00	12.52	1.59	0.004<T	8.39	0.0035	0.172	272.	65.30	800	1100
8	22/11/82 19:30	11.70	1.59	0.016	8.45	0.0160	0.107	491.	59.90	1100	1180
	Minimum :	9.11	1.56	0.002	8.30	0.0010	0.107	272.	15.40	800.	860.
	Maximum :	13.96	2.61	0.016	8.50	0.0250	0.217	491.	127.00	3500.	3100.
	Mean :	12.35	1.86	0.006	8.40	0.0073	0.164	417.	58.16	1157.	1272.

STATION #4 Mimico Creek @ QEW Offramp

#	Date and Time	FLOW m3/s	BOD5 mg/L O	NH4 mg/L N	pH	Phosphates Filt, react mg/L P	Phosphorus Unf, total mg/L P	Residue Filtra. mg/L	Residue Partic. mg/L	Fecal Coliform #/100mL	Fecal Strep #/100mL
1	21/11/82 11:30	3.86	4.10	0.006	8.01	0.0665	0.320	327.	165.00	3400	7900
2	21/11/82 13:05	5.15	5.28	0.006	8.03	0.0545	0.385	286.	131.00	8100	7600
3	21/11/82 14:00	5.77	2.54	0.016	7.66	0.0465	0.240	374.	95.50	3900	6100
4	21/11/82 15:00	4.19	2.34	0.006	7.93	0.0460	0.265	274.	86.70	2700	5900
5	21/11/82 18:15	3.39	3.02	0.008	7.92	0.0505	0.227	249.	90.10	2600	6300
	Minimum :	3.39	2.34	0.006	7.66	0.0460	0.227	249.	86.70	2600.	5900.
	Maximum :	5.77	5.28	0.016	8.03	0.0665	0.385	374.	165.00	8100.	7900.
	Mean :	4.47	3.46	0.008	7.91	0.0528	0.287	302.	113.66	3762.	6711.

STATION #5 Black Creek @ Scarlett Rd.

#	Date and Time	FLOW m3/s	BOD5 mg/L O	NH4 mg/L N	pH	Phosphates Filt, react mg/L P	Phosphorus Unf, total mg/L P	Residue Filtra. mg/L	Residue Partic. mg/L	Fecal Coliform #/100mL	Fecal Strep #/100mL
1	21/11/82 11:45	2.51	3.62	0.004<T	8.02	0.0390	0.200	291.	76.90	6500	5900
2	21/11/82 12:45	3.14	6.04	0.008	7.80	0.1550	0.417	303.	96.40	190000	67000
3	21/11/82 13:45	3.76	4.32	0.006	7.82	0.1050	0.357	271.	70.30	75000	36000
4	21/11/82 14:45	3.46	3.64	0.006	8.00	0.0365	0.187	228.	75.40	7300	6900
5	21/11/82 15:45	2.42	3.20	0.014	8.00	0.0350	0.162	243.	47.90	5200	6700
6	21/11/82 17:45	2.36	3.08	0.004<T	7.90	0.0500	0.127	282.	36.90	3700	7700
	Minimum :	2.36	3.08	0.004	7.80	0.0350	0.127	228.	36.90	3700.	5900.
	Maximum :	3.76	6.04	0.014	8.02	0.1550	0.417	303.	96.40	190000.	67000.
	Mean :	2.94	3.98	0.007	7.92	0.0701	0.242	270.	67.28	15336.	13105.

STATION #6 Humber River @ Scarlett Rd.

#	Date and Time	FLOW m3/s	BOD5 mg/L O	NH4 mg/L N	pH	Phosphates Filt, react mg/L P	Phosphorus Unf, total mg/L P	Residue Filtra. mg/L	Residue Partic. mg/L	Fecal Coliform #/100mL	Fecal Strep #/100mL
1	21/11/82 16:15	9.27	2.06	0.006	8.10	0.0200	0.112	309.	56.00	1300	2020
2	22/11/82 02:20	16.23	1.75	0.010	8.37	0.0065	0.172	457.	144.00	600	980
3	22/11/82 03:45	15.89	1.81	0.008	8.40	0.0110	0.172	440.	133.00	740	780
4	22/11/82 05:30	16.31	1.48	0.004<T	8.49	0.0060	0.225	491.	141.00	400	580
5	22/11/82 07:30	16.31	1.68	0.006	8.43	0.0090	0.180	427.	140.00	1360	1580
6	22/11/82 11:00	16.31	1.74	0.006	8.48	0.0030	0.137	425.	116.00	540	1020
7	22/11/82 13:30	16.31	1.21	0.004<T	8.49	0.0150	0.143	423.	125.00	1080	1300
8	22/11/82 20:15	13.83	1.16	0.006	8.45	0.0110	0.145	403.	134.00	980	1160
	Minimum :	9.27	1.16	0.004	8.10	0.0030	0.112	309.	56.00	400.	580.
	Maximum :	16.31	2.06	0.010	8.49	0.0200	0.225	491.	144.00	1360.	2020.
	Mean :	15.06	1.61	0.006	8.40	0.0102	0.161	422.	123.63	807.	1102.

STATION #7 Humber River @ Lawrence Ave.

#	Date and Time	FLOW m3/s	BOD5 mg/L O	NH4 mg/L N	pH	Phosphates Filt,react mg/L P	Phosphorus Unf,total mg/L P	Residue Filtrd. mg/L	Residue Partic. mg/L	Fecal Coliform #/100mL	Fecal Strep #/100mL
1	21/11/82 15:30	8.41	1.26	0.004<T	8.34	0.0205	0.112	326.	36.70	1140	1660
2	22/11/82 01:30	13.66	2.12	0.008	8.39	0.0110	0.163	404.	92.20	780	960
3	22/11/82 05:15	17.26	1.66	0.008	8.27	0.0150	0.187	424.	149.00	380	1100
4	22/11/82 07:00	17.71	1.46	0.006	8.36	0.0010<T	0.187	447.	106.00	1740	1700
5	22/11/82 09:00	17.71	1.41	0.006	8.30	0.0120	0.145	435.	120.00	360	860
6	22/11/82 10:30	16.89	1.68	0.006	8.28	0.0120	0.150	443.	124.00	760	1240
7	22/11/82 15:15	15.45	1.19	0.006	8.40	0.0070	0.127	431.	109.00	1140	1340
8	22/11/82 20:15	14.14	1.11	0.010	8.36	0.0270	0.127	440.	63.40	1320	1420
	Minimum :	8.41	1.11	0.004	8.27	0.0010	0.112	326.	36.70	360.	860.
	Maximum :	17.71	2.12	0.010	8.40	0.0270	0.187	447.	149.00	1740.	1700.
	Mean :	15.15	1.49	0.007	8.34	0.0132	0.150	419.	100.04	979.	1235.

STATION #8 West Humber @ Main Humber

#	Date and Time	FLOW m3/s	BOD5 mg/L O	NH4 mg/L N	pH	Phosphates Filt,react mg/L P	Phosphorus Unf,total mg/L P	Residue Filtrd. mg/L	Residue Partic. mg/L	Fecal Coliform #/100mL	Fecal Strep #/100mL
1	21/11/82 20:48	1.44	1.24	0.004<T	8.44	0.0215	0.085	348.	36.20	620	1460
2	22/11/82 03:30	4.97	1.22	0.008	8.21	0.0220	0.130	467.	94.50	320	420
3	22/11/82 05:45	5.17	1.07	0.006	8.38	0.0165	0.105	505.	88.50	220	320
4	22/11/82 08:15	4.97	1.14	0.010	8.23	0.0200	0.107	541.	79.60	720	820
5	22/11/82 10:30	4.67	0.75	0.006	8.44	0.0380	0.117	526.	94.20	1840	1420
6	22/11/82 12:30	4.48	1.20	0.006	8.20	0.0335	0.110	558.	69.30	1380	860
7	22/11/82 15:22	4.03	1.24	0.004<T	8.29	0.0460	0.110	524.	69.00	1800	2620
8	22/11/82 19:30	3.38	1.15	0.004<T	8.46	0.0050	0.107	511.	83.90	1480	2440
	Minimum :	1.44	0.75	0.004	8.20	0.0050	0.085	348.	36.20	220.	320.
	Maximum :	5.17	1.24	0.010	8.46	0.0460	0.130	558.	94.50	1840.	2620.
	Mean :	4.14	1.13	0.006	8.33	0.0253	0.109	498.	76.90	924.	1029.

STATION #9 Main Humber @ West Humber

#	Date and Time	FLOW m3/s	BOD5 mg/L O	NH4 mg/L N	pH	Phosphates Filt,react mg/L P	Phosphorus Unf,total mg/L P	Residue Filtra. mg/L	Residue Partic. mg/L	Fecal Coliform #/100mL	Fecal Strep #/100mL
1	21/11/82 12:06	4.13	1.12	0.006	8.48	0.0165	0.075	385.	56.50	540	1340
2	21/11/82 12:30	4.61	1.42	0.014	8.47	0.0245	0.117	344.	59.80	2100	1790
3	21/11/82 20:53	6.02	1.74	0.004<T	8.49	0.0250	0.177	362.	154.00	580	1500
4	22/11/82 05:45	8.15	0.61	0.002<T	8.44	0.0090	0.123	435.	113.00	120<=>	1100
5	22/11/82 10:30	7.94	1.63	0.006	8.52	0.0700	0.150	445.	134.00	1380	1960
6	22/11/82 12:30	7.72	1.79	0.008	8.35	0.0840	0.143	416.	114.00	1200	2520
7	22/11/82 15:38	7.12	2.41	0.006	8.50	0.0120	0.117	415.	105.00	700	1020
8	22/11/82 19:30	6.46	1.59	0.002<T	8.51	0.0095	0.100	401.	87.60	720	1120
	Minimum :	4.13	0.61	0.002	8.35	0.0090	0.075	344.	56.50	120.	1020.
	Maximum :	8.15	2.41	0.014	8.52	0.0840	0.177	445.	154.00	2100.	2520.
	Mean :	6.52	1.54	0.006	8.47	0.0313	0.125	400.	102.99	912.	1483.

STATION #10 Humber River @ Steeles Ave.

#	Date and Time	FLOW m3/s	BOD5 mg/L O	NH4 mg/L N	pH	Phosphates Filt,react mg/L P	Phosphorus Unf,total mg/L P	Residue Filtra. mg/L	Residue Partic. mg/L	Fecal Coliform #/100mL	Fecal Strep #/100mL
1	21/11/82 11:10	3.73	1.56	0.004<T	8.27	0.0260	0.137	360.	95.50	1020	1340
2	21/11/82 13:16	4.31	0.82	0.026	8.47	0.0135	0.073	350.	54.60	660	820
3	21/11/82 20:13	7.01	1.00	0.002<T	8.42	0.0205	0.132	384.	109.00	580	960
4	22/11/82 02:00	8.26	2.20	0.006	8.42	0.0100	0.127	401.	122.00	860	1320
5	22/11/82 04:30	8.18	2.02	1.040	8.48	0.0390	0.232	421.	187.00	1040	3600
6	22/11/82 11:30	7.82	2.00	0.010	8.45	0.0120	0.143	434.	110.00	540	1780
7	22/11/82 14:15	7.47	1.78	0.010	8.28	0.0225	0.102	435.	48.40	780	940
8	22/11/82 20:15	6.79	1.33	0.014	8.48	0.0570	0.093	496.	75.90	540	700
	Minimum :	3.73	0.82	0.002	8.27	0.0100	0.073	350.	48.40	540.	700.
	Maximum :	8.26	2.20	1.040	8.48	0.0570	0.232	496.	187.00	1040.	3600.
	Mean :	6.70	1.59	0.139	8.41	0.0251	0.130	410.	100.30	729.	1372.

STATION #11 Black Creek @ Lawrence Ave.

#	Date and Time	FLOW m3/s	BOD5 mg/L O	NH4 mg/L N	pH	Phosphates Filt,react mg/L P	Phosphorus Unf,total mg/L P	Residue Filtra. mg/L	Residue Partic. mg/L	Fecal Coliform #/100mL	Fecal Strep #/100mL
1	21/11/82 11:50	1.39	2.60	0.002<T	7.87	0.0350	0.202	260.	94.20	5900	7700
2	21/11/82 13:00	1.76	2.48	0.006	8.13	0.0300	0.153	239.	57.30	4800	5900
3	21/11/82 14:00	2.00	2.38	0.008	7.95	0.0320	0.143	224.	67.50	3300	6300
4	21/11/82 15:00	1.39	1.76	0.002<T	7.75	0.0460	0.185	238.	49.60	4500	6100
5	21/11/82 16:00	1.17	1.52	0.004<T	8.08	0.0390	0.140	239.	51.90	4700	5500
	Minimum :	1.17	1.52	0.002	7.75	0.0300	0.140	224.	49.60	3300.	5500.
	Maximum :	2.00	2.60	0.008	8.13	0.0460	0.202	260.	94.20	5900.	7700.
	Mean :	1.54	2.15	0.004	7.96	0.0364	0.165	240.	64.10	4562.	6259.

Inorganic Parameters (Metals)

STATION #1 Taylor Creek

#	Date and Time	FLOW m3/s	Cadmium mg/L Cd	Chromium mg/L Cr	Copper mg/L Cu	Mercury ug/L Hg	Nickel mg/L Ni	Lead mg/L Pb	Zinc mg/L Zn
1	21/11/82 13:05	1.35	0.0002	0.009	0.035	0.080UIC	0.006	0.060	0.130
3	21/11/82 16:30	0.97	0.0006	0.006	0.202	0.040<	0.003	0.043	0.080
	Minimum :	0.46	0.0002	0.006	0.035	0.040	0.003	0.043	0.080
	Maximum :	1.50	0.0006	0.009	0.202	0.080	0.006	0.060	0.130
	Mean :	0.90	0.0004	0.007	0.119	0.060	0.005	0.052	0.105

STATION #2 Don River @ Front St.

#	Date and Time	FLOW m3/s	Cadmium mg/L Cd	Chromium mg/L Cr	Copper mg/L Cu	Mercury ug/L Hg	Nickel mg/L Ni	Lead mg/L Pb	Zinc mg/L Zn
1	21/11/82 12:04	13.41	0.0010	0.010	0.034	0.100UCS	0.008	0.100	0.140
3	21/11/82 16:50	9.50	0.0004	0.013	0.027	0.090UCS	0.008	0.055	0.120
	Minimum :	5.95	0.0004	0.010	0.027	0.090	0.008	0.055	0.120
	Maximum :	13.41	0.0010	0.013	0.034	0.100	0.008	0.100	0.140
	Mean :	9.60	0.0007	0.012	0.031	0.095	0.008	0.078	0.130

STATION #3 Humber River @ Bloor St.

#	Date and Time	FLOW m3/s	Cadmium mg/L Cd	Chromium mg/L Cr	Copper mg/L Cu	Mercury ug/L Hg	Nickel mg/L Ni	Lead mg/L Pb	Zinc mg/L Zn
2	22/11/82 02:30	11.10	0.0002	0.009	0.015	0.040<	0.004	0.016	0.033
4	22/11/82 06:00	13.83	0.0002	0.007	0.019	0.040	0.004	0.016	0.040
7	22/11/82 16:00	12.52	0.0002	0.006	0.019	0.040<	0.003	0.013	0.029
	Minimum :	9.11	0.0002	0.006	0.015	0.040	0.003	0.013	0.029
	Maximum :	13.96	0.0002	0.009	0.019	0.040	0.004	0.016	0.040
	Mean :	12.35	0.0002	0.007	0.018	0.040	0.004	0.015	0.034

STATION #4 Mimico Creek @ QEW Offramp

#	Date and Time	FLOW m3/s	Cadmium mg/L Cd	Chromium mg/L Cr	Copper mg/L Cu	Mercury ug/L Hg	Nickel mg/L Ni	Lead mg/L Pb	Zinc mg/L Zn
1	21/11/82 11:30	3.86	0.0020<	0.020	0.030	0.040	0.010<	0.030<	0.140
4	21/11/82 15:00	4.19	0.0006	0.027	0.019	0.040	0.004	0.035	0.110
	Minimum :	3.39	0.0006	0.020	0.019	0.040	0.004	0.030	0.110
	Maximum :	5.77	0.0020	0.027	0.030	0.040	0.010	0.035	0.140
	Mean :	4.47	0.0013	0.024	0.024	0.040	0.007	0.032	0.125

STATION #5 Black Creek @ Scarlett Rd.

#	Date and Time	FLOW m3/s	Cadmium mg/L Cd	Chromium mg/L Cr	Copper mg/L Cu	Mercury ug/L Hg	Nickel mg/L Ni	Lead mg/L Pb	Zinc mg/L Zn
3	21/11/82 13:45	3.76	0.0009	0.007	0.026	0.050	0.009	0.065	0.094
5	21/11/82 15:45	2.42	0.0007	0.007	0.026	0.040	0.008	0.070	0.089
	Minimum :	2.36	0.0007	0.007	0.026	0.040	0.008	0.065	0.089
	Maximum :	3.76	0.0009	0.007	0.026	0.050	0.009	0.070	0.094
	Mean :	2.94	0.0008	0.007	0.026	0.045	0.008	0.068	0.091

STATION #6 Humber River @ Scarlett Rd.

#	Date and Time	FLOW m3/s	Cadmium mg/L Cd	Chromium mg/L Cr	Copper mg/L Cu	Mercury ug/L Hg	Nickel mg/L Ni	Lead mg/L Pb	Zinc mg/L Zn
2	22/11/82 02:20	16.23	0.0003	0.009	0.020	0.040<	0.004	0.012	0.037
4	22/11/82 05:30	16.31	0.0003	0.008	0.020	0.040<	0.004	0.014	0.034
6	22/11/82 11:00	16.31	0.0002	0.006	0.018	0.040<	0.003	0.012	0.022
	Minimum :	9.27	0.0002	0.006	0.018	0.040	0.003	0.012	0.022
	Maximum :	16.31	0.0003	0.009	0.020	0.040	0.004	0.014	0.037
	Mean :	15.06	0.0003	0.008	0.019	0.040	0.004	0.013	0.031

STATION #7 Humber River @ Lawrence Ave.

#	Date and Time	FLOW m3/s	Cadmium mg/L Cd	Chromium mg/L Cr	Copper mg/L Cu	Mercury ug/L Hg	Nickel mg/L Ni	Lead mg/L Pb	Zinc mg/L Zn
2	22/11/82 01:30	13.66	0.0002	0.007	0.018	0.040<	0.003	0.012	0.030
3	22/11/82 05:15	17.26	0.0002	0.006	0.017	0.040<	0.004	0.011	0.030
6	22/11/82 10:30	16.89	0.0004	0.006	0.020	0.040<	0.036	0.010	0.022
	Minimum :	8.41	0.0002	0.006	0.017	0.040	0.003	0.010	0.022
	Maximum :	17.71	0.0004	0.007	0.020	0.040	0.036	0.012	0.030
	Mean :	15.15	0.0003	0.006	0.018	0.040	0.014	0.011	0.027

STATION #8 West Humber @ Main Humber

# Date and Time	FLOW m3/s	Cadmium mg/L Cd	Chromium mg/L Cr	Copper mg/L Cu	Mercury ug/L Hg	Nickel mg/L Ni	Lead mg/L Pb	Zinc mg/L Zn
2 22/11/82 03:30	4.97	0.0003	0.005	0.016	0.040<	0.001<	0.010	0.017
6 22/11/82 12:30	4.48	0.0002	0.004	0.015	0.040<	0.001<	0.005	0.011
7 22/11/82 15:22	4.03	0.0002	0.004	0.015	0.040<	0.001<	0.008	0.009
Minimum :	1.44	0.0002	0.004	0.015	0.040	0.001	0.005	0.009
Maximum :	5.17	0.0003	0.005	0.016	0.040	0.001	0.010	0.017
Mean :	4.14	0.0002	0.004	0.015	0.040	0.001	0.008	0.012

STATION #9 Main Humber @ West Humber

# Date and Time	FLOW m3/s	Cadmium mg/L Cd	Chromium mg/L Cr	Copper mg/L Cu	Mercury ug/L Hg	Nickel mg/L Ni	Lead mg/L Pb	Zinc mg/L Zn
2 21/11/82 12:30	4.61	0.0002	0.010	0.016	0.040<	0.003	0.012	0.041
6 22/11/82 12:30	7.72	0.0004	0.007	0.013	0.040<	0.001<	0.005	0.014
7 22/11/82 15:38	7.12	0.0002	0.005	0.130	0.040<	0.001<	0.006	0.010
Minimum :	4.13	0.0002	0.005	0.013	0.040	0.001	0.005	0.010
Maximum :	8.15	0.0004	0.010	0.130	0.040	0.003	0.012	0.041
Mean :	6.52	0.0003	0.007	0.053	0.040	0.002	0.008	0.022

STATION #10 Humber River @ Steeles Ave.

# Date and Time	FLOW m3/s	Cadmium mg/L Cd	Chromium mg/L Cr	Copper mg/L Cu	Mercury ug/L Hg	Nickel mg/L Ni	Lead mg/L Pb	Zinc mg/L Zn
2 21/11/82 13:16	4.31	0.0006	0.004	0.017	0.040<	0.002	0.012	0.016
4 22/11/82 02:00	8.26	0.0002	0.004	0.013	0.040<	0.001<	0.006	0.013
7 22/11/82 14:15	7.47	0.0002	0.004	0.011	0.040<	0.001<	0.006	0.013
8 22/11/82 20:15	6.79	0.0003	0.003	0.013	0.040<	0.002	0.003	0.019
Minimum :	3.73	0.0002	0.003	0.011	0.040	0.001	0.003	0.013
Maximum :	8.26	0.0006	0.004	0.017	0.040	0.002	0.012	0.019
Mean :	6.70	0.0003	0.004	0.014	0.040	0.002	0.007	0.015

STATION #11 Black Creek @ Lawrence Ave.

# Date and Time	FLOW m3/s	Cadmium mg/L Cd	Chromium mg/L Cr	Copper mg/L Cu	Mercury ug/L Hg	Nickel mg/L Ni	Lead mg/L Pb	Zinc mg/L Zn
1 21/11/82 11:50	1.39	0.0005	0.006	0.018	0.050	0.008	0.039	0.079
4 21/11/82 15:00	1.39	0.0005	0.009	0.018	0.040<	0.007	0.120	0.091
Minimum :	1.17	0.0005	0.006	0.018	0.040	0.007	0.039	0.079
Maximum :	2.00	0.0005	0.009	0.018	0.050	0.008	0.120	0.091
Mean :	1.54	0.0005	0.007	0.018	0.045	0.008	0.079	0.085

TORONTO AREA WATERSHED MANAGEMENT STUDY
WATER QUALITY DATA
WET EVENT 3 - NOVEMBER 21 TO NOVEMBER 22, 1982

Pesticides and Organic Parameters

STATION #1 Taylor Creek

#	Date and Time	FLOW m3/s	10 ALDR ng/L	11 BHCA ng/L	12 BHCB ng/L	13 BHCG ng/L	14 CHLA ng/L	15 CHLG ng/L	16 DIEL ng/L	17 DMDT ng/L	18 END1 ng/L	19 END2 ng/L	20 ENDR ng/L	21 ENDS ng/L
5	21/11/82 20:28	0.53	1<W	12	7	16	5	5	2<W	5<W	2<W	4<W	4<W	4<W

STATION #2 Don River @ Front St.

#	Date and Time	FLOW m3/s	10 ALDR ng/L	11 BHCA ng/L	12 BHCB ng/L	13 BHCG ng/L	14 CHLA ng/L	15 CHLG ng/L	16 DIEL ng/L	17 DMDT ng/L	18 END1 ng/L	19 END2 ng/L	20 ENDR ng/L	21 ENDS ng/L
4	21/11/82 19:10	8.35	1<W	12	6	8	6	2<W	2<W	5<W	2<W	4<W	4<W	4<W

STATION #3 Humber River @ Bloor St.

#	Date and Time	FLOW m3/s	10 ALDR ng/L	11 BHCA ng/L	12 BHCB ng/L	13 BHCG ng/L	14 CHLA ng/L	15 CHLG ng/L	16 DIEL ng/L	17 DMDT ng/L	18 END1 ng/L	19 END2 ng/L	20 ENDR ng/L	21 ENDS ng/L
2	22/11/82 02:30	11.10	1<W	6	1<W	7	2<W	2<W	2<W	5<W	2<W	4<W	4<W	4<W
7	22/11/82 16:00	12.52	1<W	4	1<W	1<W	2<W	2<W	2<W	5<W	2<W	4<W	4<W	4<W

STATION #4 Mimico Creek @ QEW Offramp

#	Date and Time	FLOW m3/s	10 ALDR ng/L	11 BHCA ng/L	12 BHCB ng/L	13 BHCG ng/L	14 CHLA ng/L	15 CHLG ng/L	16 DIEL ng/L	17 DMDT ng/L	18 END1 ng/L	19 END2 ng/L	20 ENDR ng/L	21 ENDS ng/L
1	21/11/82 11:30	3.86	1<W	10	4	4	4	3	2<W	5<W	2<W	4<W	4<W	4<W
4	21/11/82 15:00	4.19	1<W	18	12	18	2<W	2<W	2	5<W	2<W	4<W	4<W	4<W

STATION #5 Black Creek @ Scarlett Rd.

#	Date and Time	FLOW m3/s	10 ALDR ng/L	11 BHCA ng/L	12 BHCB ng/L	13 BHCG ng/L	14 CHLA ng/L	15 CHLG ng/L	16 DIEL ng/L	17 DMDT ng/L	18 END1 ng/L	19 END2 ng/L	20 ENDR ng/L	21 ENDS ng/L
3	21/11/82 13:45	3.76	1<W	14	8	5	6	6	6	5<W	2<W	4<W	4<W	4<W
5	21/11/82 15:45	2.42	1<W	11	5	4	2<W	2<W	2<W	5<W	2<W	4<W	4<W	4<W

STATION #6 Humber River @ Scarlett Rd.

# Date and Time	FLOW m3/s	10 ALDR ng/L	11 BHCA ng/L	12 BHCB ng/L	13 BHCG ng/L	14 CHLA ng/L	15 CHLG ng/L	16 DIEL ng/L	17 DMDT ng/L	18 END1 ng/L	19 END2 ng/L	20 ENDR ng/L	21 ENDS ng/L
2 22/11/82 02:20	16.23	1<W	4	1<W	1<W	2<W	2<W	2<W	5<W	2<W	4<W	4<W	4<W
6 22/11/82 11:00	16.31	1<W	3	1<W	7	2<W	2<W	2<W	5<W	2<W	4<W	4<W	4<W

STATION #7 Humber River @ Lawrence Ave.

# Date and Time	FLOW m3/s	10 ALDR ng/L	11 BHCA ng/L	12 BHCB ng/L	13 BHCG ng/L	14 CHLA ng/L	15 CHLG ng/L	16 DIEL ng/L	17 DMDT ng/L	18 END1 ng/L	19 END2 ng/L	20 ENDR ng/L	21 ENDS ng/L
2 22/11/82 01:30	13.66	1<W	4	1<W	7	2<W	2<W	2<W	5<W	2<W	4<W	4<W	4<W
6 22/11/82 10:30	16.89	1<W	3	1<W	8	2<W	2<W	2<W	5<W	2<W	4<W	4<W	4<W

STATION #8 West Humber @ Main Humber

# Date and Time	FLOW m3/s	10 ALDR ng/L	11 BHCA ng/L	12 BHCB ng/L	13 BHCG ng/L	14 CHLA ng/L	15 CHLG ng/L	16 DIEL ng/L	17 DMDT ng/L	18 END1 ng/L	19 END2 ng/L	20 ENDR ng/L	21 ENDS ng/L
2 22/11/82 03:30	4.97	1<W	3	1<W	6	2<W	2<W	2<W	5<W	2<W	4<W	4<W	4<W
6 22/11/82 12:30	4.48	1<W	3	1<W	3	2<W	2<W	2<W	5<W	2<W	4<W	4<W	4<W

STATION #9 Main Humber @ West Humber

# Date and Time	FLOW m3/s	10 ALDR ng/L	11 BHCA ng/L	12 BHCB ng/L	13 BHCG ng/L	14 CHLA ng/L	15 CHLG ng/L	16 DIEL ng/L	17 DMDT ng/L	18 END1 ng/L	19 END2 ng/L	20 ENDR ng/L	21 ENDS ng/L
2 21/11/82 12:30	4.61	1<W	7	4	3	2<W	2<W	2	5<W	2<W	4<W	4<W	4<W
6 22/11/82 12:30	7.72	1<W	2	1<W	4	2<W	2<W	2<W	5<W	2<W	4<W	4<W	4<W

STATION #10 Humber River @ Steeles Ave.

# Date and Time	FLOW m3/s	10 ALDR ng/L	11 BHCA ng/L	12 BHCB ng/L	13 BHCG ng/L	14 CHLA ng/L	15 CHLG ng/L	16 DIEL ng/L	17 DMDT ng/L	18 END1 ng/L	19 END2 ng/L	20 ENDR ng/L	21 ENDS ng/L
2 21/11/82 13:16	4.31	1<W	3	1<W	2	2<W	2<W	2<W	5<W	2<W	4<W	4<W	4<W
4 22/11/82 02:00	8.26	1<W	3	1<W	6	2<W	2<W	2<W	5<W	2<W	4<W	4<W	4<W

STATION #11 Black Creek @ Lawrence Ave.

#	Date and Time	FLOW m3/s	10 ALDR ng/L	11 BHCA ng/L	12 BHCB ng/L	13 BHCG ng/L	14 CHLA ng/L	15 CHLG ng/L	16 DIEL ng/L	17 DMDT ng/L	18 END1 ng/L	19 ENDO ng/L	20 ENDR ng/L	21 ENDS ng/L
1	21/11/82 11:50	1.39	1<W	10	4	16	3	5	2<W	5<W	2<W	4<W	4<W	4<W
4	21/11/82 15:00	1.39	1<W	12	4	10	2<W	2<W	2<W	5<W	2<W	4<W	4<W	4<W

TORONTO AREA WATERSHED MANAGEMENT STUDY
WATER QUALITY DATA
WET EVENT 3 - NOVEMBER 21 TO NOVEMBER 22, 1982

Pesticides and Organic Parameters

STATION #1 Taylor Creek

# Date and Time	FLOW m3/s	22 HEPE ng/L	23 HEPT ng/L	24 MIRX ng/L	25 OCHL ng/L	26 OPDT ng/L	27 PCBT ng/L	28 PPDD ng/L	29 PPDE ng/L	30 PPDT ng/L	31 245T ng/L	32 24D ng/L	33 24DP ng/L
5 21/11/82 20:28	0.53	1<W	1<W	5<W	2<W	5<W	0!UI	5<W	1<W	5<W	50<W	0!UI	200<W

STATION #2 Don River @ Front St.

# Date and Time	FLOW m3/s	22 HEPE ng/L	23 HEPT ng/L	24 MIRX ng/L	25 OCHL ng/L	26 OPDT ng/L	27 PCBT ng/L	28 PPDD ng/L	29 PPDE ng/L	30 PPDT ng/L	31 245T ng/L	32 24D ng/L	33 24DP ng/L
4 21/11/82 19:10	8.35	1<W	1<W	5<W	2<W	5<W	0!UI	5<W	1<W	5<W	50<W	0!UI	200<W

STATION #3 Humber River @ Bloor St.

# Date and Time	FLOW m3/s	22 HEPE ng/L	23 HEPT ng/L	24 MIRX ng/L	25 OCHL ng/L	26 OPDT ng/L	27 PCBT ng/L	28 PPDD ng/L	29 PPDE ng/L	30 PPDT ng/L	31 245T ng/L	32 24D ng/L	33 24DP ng/L
2 22/11/82 02:30	11.10	1<W	1<W	5<W	2<W	5<W	40P54	5<W	1<W	5<W	50<W	380	200<W
7 22/11/82 16:00	12.52	1<W	1<W	5<W	2<W	5<W	20<W	5<W	1<W	5<W	50<W	100<W	200<W

STATION #4 Mimico Creek @ QEW Offramp

# Date and Time	FLOW m3/s	22 HEPE ng/L	23 HEPT ng/L	24 MIRX ng/L	25 OCHL ng/L	26 OPDT ng/L	27 PCBT ng/L	28 PPDD ng/L	29 PPDE ng/L	30 PPDT ng/L	31 245T ng/L	32 24D ng/L	33 24DP ng/L
1 21/11/82 11:30	3.86	1<W	1<W	5<W	2<W	5<W	0!UI	5<W	1<W	5<W	50<W	0!UI	200<W
4 21/11/82 15:00	4.19	1<W	1<W	5<W	2<W	5<W	0!UI	5<W	1<W	5<W	50<W	0!UI	200<W

STATION #5 Black Creek @ Scarlett Rd.

# Date and Time	FLOW m3/s	22 HEPE ng/L	23 HEPT ng/L	24 MIRX ng/L	25 OCHL ng/L	26 OPDT ng/L	27 PCBT ng/L	28 PPDD ng/L	29 PPDE ng/L	30 PPDT ng/L	31 245T ng/L	32 24D ng/L	33 24DP ng/L
3 21/11/82 13:45	3.76	1<W	1<W	5<W	2<W	5<W	0!UI	5<W	1<W	5<W	50<W	0!UI	200<W
5 21/11/82 15:45	2.42	1<W	1<W	5<W	2<W	5<W	0!UI	5<W	1<W	5<W	50<	0!UI	200<W

STATION #6 Humber River @ Scarlett Rd.

#	Date and Time	FLOW m3/s	22 HEPE ng/L	23 HEPT ng/L	24 MIRX ng/L	25 OCHL ng/L	26 OPDT ng/L	27 PCBT ng/L	28 PPDD ng/L	29 PPDE ng/L	30 PPDT ng/L	31 245T ng/L	32 24D ng/L	33 24DB ng/L
2	22/11/82 02:20	16.23	1<W	1<W	5<W	2<W	5<W	20<W	5<W	1<W	5<W	50<W	330	200<W
6	22/11/82 11:00	16.31	1<W	1<W	5<W	2<W	5<W	20<W	5<W	1<W	5<W	50<W	100<W	200<W

STATION #7 Humber River @ Lawrence Ave.

#	Date and Time	FLOW m3/s	22 HEPE ng/L	23 HEPT ng/L	24 MIRX ng/L	25 OCHL ng/L	26 OPDT ng/L	27 PCBT ng/L	28 PPDD ng/L	29 PPDE ng/L	30 PPDT ng/L	31 245T ng/L	32 24D ng/L	33 24DB ng/L
2	22/11/82 01:30	13.66	1<W	1<W	5<W	2<W	5<W	20<W	5<W	1<W	5<W	50<W	280	200<W
6	22/11/82 10:30	16.89	1<W	1<W	5<W	2<W	5<W	40P54	5<W	1<W	5<W	50<W	100<W	200<W

STATION #8 West Humber @ Main Humber

#	Date and Time	FLOW m3/s	22 HEPE ng/L	23 HEPT ng/L	24 MIRX ng/L	25 OCHL ng/L	26 OPDT ng/L	27 PCBT ng/L	28 PPDD ng/L	29 PPDE ng/L	30 PPDT ng/L	31 245T ng/L	32 24D ng/L	33 24DB ng/L
2	22/11/82 03:30	4.97	1<W	1<W	5<W	2<W	5<W	20<W	5<W	1<W	5<W	50<W	100<W	200<W
6	22/11/82 12:30	4.48	1<W	1<W	5<W	2<W	5<W	20<W	5<W	1<W	5<W	50<W	100<W	200<W

STATION #9 Main Humber @ West Humber

#	Date and Time	FLOW m3/s	22 HEPE ng/L	23 HEPT ng/L	24 MIRX ng/L	25 OCHL ng/L	26 OPDT ng/L	27 PCBT ng/L	28 PPDD ng/L	29 PPDE ng/L	30 PPDT ng/L	31 245T ng/L	32 24D ng/L	33 24DB ng/L
2	21/11/82 12:30	4.61	1<W	1<W	5<W	2<W	5<W	0!UI	5<W	1<W	5<W	50<W	100<W	200<W
6	22/11/82 12:30	7.72	1<W	1<W	5<W	2<W	5<W	20<W	5<W	1<W	5<W	50<W	100<W	200<W

STATION #10 Humber River @ Steeles Ave.

#	Date and Time	FLOW m3/s	22 HEPE ng/L	23 HEPT ng/L	24 MIRX ng/L	25 OCHL ng/L	26 OPDT ng/L	27 PCBT ng/L	28 PPDD ng/L	29 PPDE ng/L	30 PPDT ng/L	31 245T ng/L	32 24D ng/L	33 24DB ng/L
2	21/11/82 13:16	4.31	1<W	1<W	5<W	2<W	10	20<W	5<W	1<W	25	50<W	0!UI	200<W
4	22/11/82 02:00	8.26	1<W	1<W	5<W	2<W	5<W	20<W	5<W	1<W	5<W	50<W	100<W	200<W

STATION #11 Black Creek @ Lawrence Ave.

#	Date and Time	FLOW m3/s	22 HEPE ng/L	23 HEPT ng/L	24 MIRX ng/L	25 OCHL ng/L	26 OPDT ng/L	27 PCBT ng/L	28 PPDD ng/L	29 PPDE ng/L	30 PPDT ng/L	31 245T ng/L	32 24D ng/L	33 24DB ng/L
1	21/11/82 11:50	1.39	1<W	1<W	5<W	2<W	5<W	30P54	5<W	2	5<W	50<W	0!UI	200<W
4	21/11/82 15:00	1.39	1<W	1<W	5<W	2<W	5<W	0!UI	5<W	2	5<W	50<W	0!UI	200<W

TORONTO AREA WATERSHED MANAGEMENT STUDY
WATER QUALITY DATA
WET EVENT 3 - NOVEMBER 21 TO NOVEMBER 22, 1982

Pesticides and Organic Parameters

STATION #1 Taylor Creek

#	Date and Time	FLOW m3/s	34 24DP ng/L	35 DICA ng/L	36 PICL ng/L	37 SILV ng/L	38 HCB ng/L	39 234 ng/L	40 2345 ng/L	41 2356 ng/L	42 245 ng/L	43 246 ng/L	44 PCPH ng/L
5	21/11/82 20:28	0.53	100<W	100<W	100<W	50<W	2	100<W	50<W	50<W	50<W	50<W	50<W

STATION #2 Don River @ Front St.

#	Date and Time	FLOW m3/s	34 24DP ng/L	35 DICA ng/L	36 PICL ng/L	37 SILV ng/L	38 HCB ng/L	39 234 ng/L	40 2345 ng/L	41 2356 ng/L	42 245 ng/L	43 246 ng/L	44 PCPH ng/L
4	21/11/82 19:10	8.35	100<W	100<W	100<W	50<W	2	100<W	50<W	50<W	50<W	50<W	50<W

STATION #3 Humber River @ Bloor St.

#	Date and Time	FLOW m3/s	34 24DP ng/L	35 DICA ng/L	36 PICL ng/L	37 SILV ng/L	38 HCB ng/L	39 234 ng/L	40 2345 ng/L	41 2356 ng/L	42 245 ng/L	43 246 ng/L	44 PCPH ng/L
2	22/11/82 02:30	11.10	100<W	100<W	100<W	50	1<W	100<W	50<W	50<W	50<W	50<W	50<W
7	22/11/82 16:00	12.52	100<W	100<W	100<W	50<W	1<W	0NOD	0NOD	0NOD	0NOD	0NOD	0NOD

STATION #4 Mimico Creek @ QEW Offramp

#	Date and Time	FLOW m3/s	34 24DP ng/L	35 DICA ng/L	36 PICL ng/L	37 SILV ng/L	38 HCB ng/L	39 234 ng/L	40 2345 ng/L	41 2356 ng/L	42 245 ng/L	43 246 ng/L	44 PCPH ng/L
1	21/11/82 11:30	3.86	100<W	100<W	100<W	50<W	3	100<W	50<W	50<W	50<W	50<W	95
4	21/11/82 15:00	4.19	100<W	100<W	100<W	50<W	2	100<W	50<W	50<W	50<W	50<W	50<W

STATION #5 Black Creek @ Scarlett Rd.

#	Date and Time	FLOW m3/s	34 24DP ng/L	35 DICA ng/L	36 PICL ng/L	37 SILV ng/L	38 HCB ng/L	39 234 ng/L	40 2345 ng/L	41 2356 ng/L	42 245 ng/L	43 246 ng/L	44 PCPH ng/L
3	21/11/82 13:45	3.76	100<W	100<W	100<W	50<W	3	100<W	50<W	50<W	50<W	50<W	50<W
5	21/11/82 15:45	2.42	100<W	100<W	100<W	50<W	1<W	100<W	50<W	50<W	50<W	50<W	50<W

STATION #6 Humber River @ Scarlett Rd.

# Date and Time	FLOW m3/s	34 24DP ng/L	35 DICA ng/L	36 PICL ng/L	37 SILV ng/L	38 HCB ng/L	39 234 ng/L	40 2345 ng/L	41 2356 ng/L	42 245 ng/L	43 246 ng/L	44 PCPH ng/L
2 22/11/82 02:20	16.23	100<W	100<W	100<W	50<W	1<W	100<W	50<W	50<W	50<W	50<W	50<W
6 22/11/82 11:00	16.31	100<W	100<W	100<W	50<W	1<W	100<W	50<W	50<W	50<W	50<W	50<W

STATION #7 Humber River @ Lawrence Ave.

# Date and Time	FLOW m3/s	34 24DP ng/L	35 DICA ng/L	36 PICL ng/L	37 SILV ng/L	38 HCB ng/L	39 234 ng/L	40 2345 ng/L	41 2356 ng/L	42 245 ng/L	43 246 ng/L	44 PCPH ng/L
2 22/11/82 01:30	13.66	100<W	100<W	170	50<W	1<W	100<W	50<W	50<W	50<W	50<W	50<W
6 22/11/82 10:30	16.89	100<W	100<W	100<W	50<W	1<W	100<W	50<W	50<W	50<W	50<W	50<W

STATION #8 West Humber @ Main Humber

# Date and Time	FLOW m3/s	34 24DP ng/L	35 DICA ng/L	36 PICL ng/L	37 SILV ng/L	38 HCB ng/L	39 234 ng/L	40 2345 ng/L	41 2356 ng/L	42 245 ng/L	43 246 ng/L	44 PCPH ng/L
2 22/11/82 03:30	4.97	100<W	100<W	100<W	50<W	1<W	100<W	50<W	50<W	50<W	50<W	50<W
6 22/11/82 12:30	4.48	100<W	100<W	100<W	50<W	1<W	100<W	50<W	50<W	50<W	50<W	50<W

STATION #9 Main Humber @ West Humber

# Date and Time	FLOW m3/s	34 24DP ng/L	35 DICA ng/L	36 PICL ng/L	37 SILV ng/L	38 HCB ng/L	39 234 ng/L	40 2345 ng/L	41 2356 ng/L	42 245 ng/L	43 246 ng/L	44 PCPH ng/L
2 21/11/82 12:30	4.61	100<W	100<W	100<W	50<W	1<W	100<W	50<W	50<W	50<W	50<W	50<W
6 22/11/82 12:30	7.72	100<W	100<W	100<W	50<W	1<W	100<W	50<W	50<W	50<W	50<W	50<W

STATION #10 Humber River @ Steeles Ave.

# Date and Time	FLOW m3/s	34 24DP ng/L	35 DICA ng/L	36 PICL ng/L	37 SILV ng/L	38 HCB ng/L	39 234 ng/L	40 2345 ng/L	41 2356 ng/L	42 245 ng/L	43 246 ng/L	44 PCPH ng/L
2 21/11/82 13:16	4.31	100<W	100<W	100<W	50<W	1<W	100<W	50<W	50<W	50<W	50<W	50<W
4 22/11/82 02:00	8.26	100<W	100<W	100<W	50<W	1<W	100<W	50<W	50<W	50<W	50<W	50<W

STATION #11 Black Creek @ Lawrence Ave.

# Date and Time	FLOW m3/s	34 24DP ng/L	35 DICA ng/L	36 PICL ng/L	37 SILV ng/L	38 HCB ng/L	39 234 ng/L	40 2345 ng/L	41 2356 ng/L	42 245 ng/L	43 246 ng/L	44 PCPH ng/L
1 21/11/82 11:50	1.39	100<W	100<W	100<W	50<W	1<W	100<W	50<W	50<W	50<W	50<W	140
4 21/11/82 15:00	1.39	100<W	100<W	100<W	50<W	1<W	100<W	50<W	50<W	50<W	50<W	225